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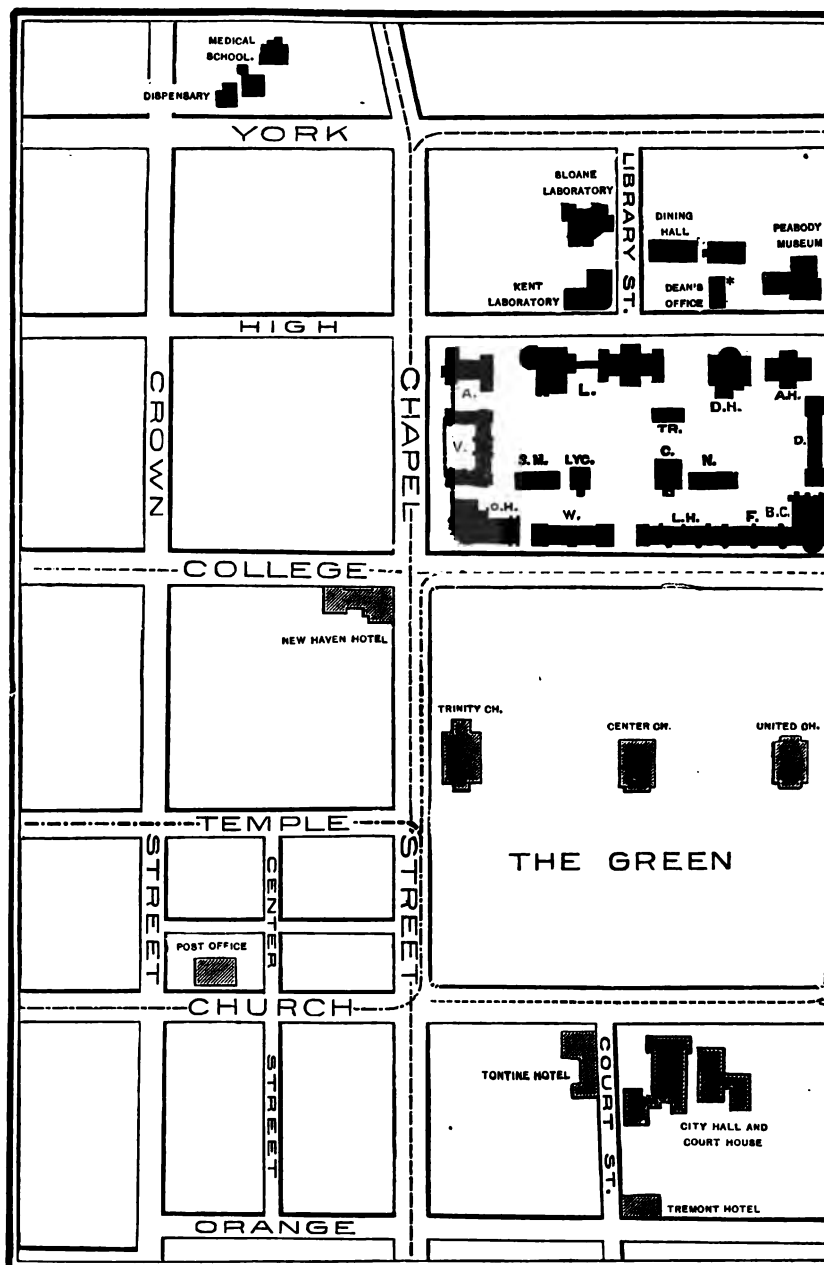
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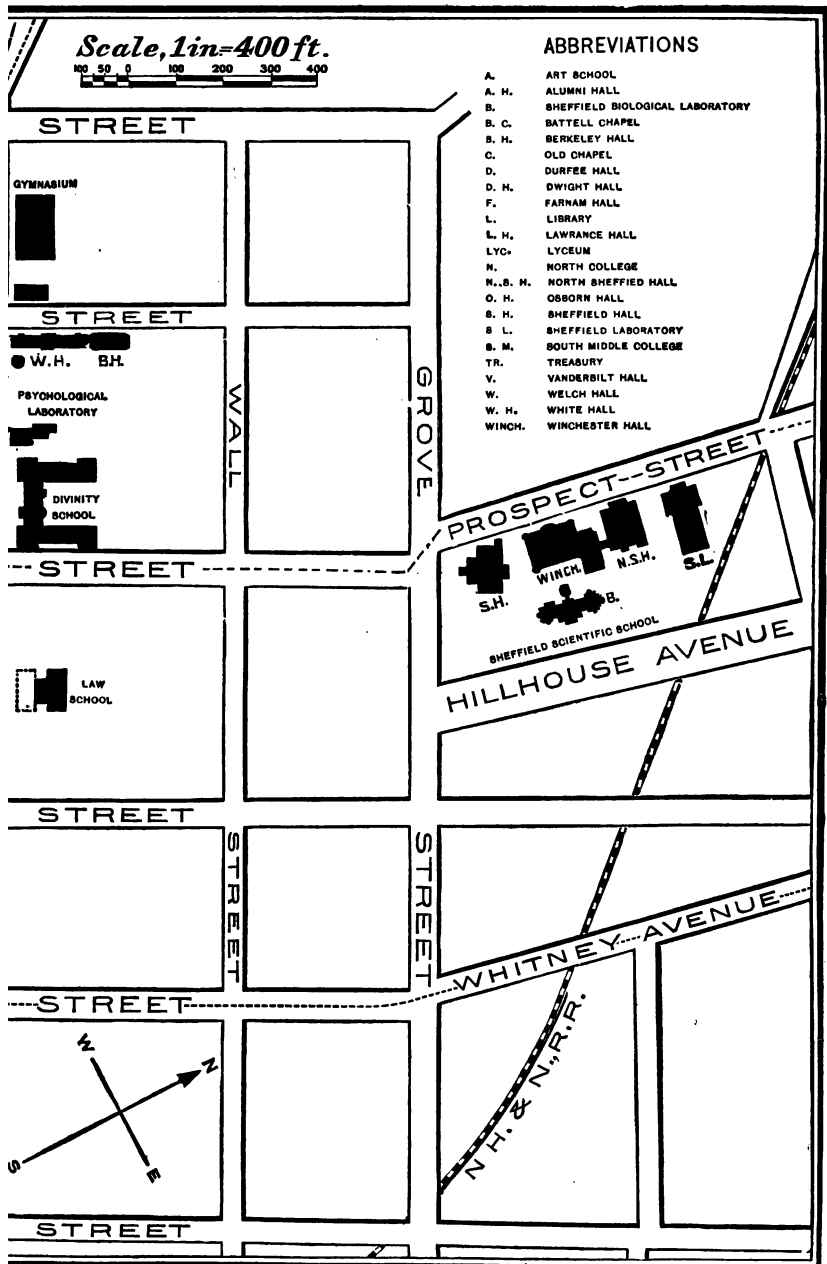
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LOCATION OF THE YALE U



UNIVERSITY BUILDINGS, 1895.



YALE UNIVERSITY

Courses of Graduate Instruction

IN THE DEPARTMENT OF

PHILOSOPHY AND THE ARTS

1895-96



NEW HAVEN:

1895

CALENDAR

1895

26 Sept.	Thursday	FIRST TERM begins.
27 Nov.	Wednesday	THANKSGIVING RECESS begins, 1.20 P. M.
29 Nov.	Friday	RECESS ends, 8 A. M.
18 Dec.	Wednesday	FIRST TERM ends.

Winter Vacation

1896

7 Jan.	Tuesday	SECOND TERM begins.
1 April	Wednesday	SPRING RECESS begins, 1.20 P. M.
9 April	Thursday	RECESS ends, 8 A. M.
20 May	Wednesday	Anniversary of the Divinity School.
30 May	Saturday	School of the Fine Arts, term ends.
21 June	Sunday	Baccalaureate Sermon.
24 June	Wednesday	COMMENCEMENT.

Summer Vacation

21 Sept.	Thursday	FIRST TERM begins.
16 Dec.	Wednesday	FIRST TERM ends.

For information with regard to the Graduate Department, not contained in this pamphlet, address the Dean, Professor A. W. PHILLIPS.

With regard to Fellowships and Scholarships (see page 13) address Professor GEORGE T. LADD.

GRADUATE DEPARTMENT OF YALE UNIVERSITY

FACULTY

REV. TIMOTHY DWIGHT, D.D., LL.D., PRESIDENT

REV. JAMES M. HOPPIN, D.D., *Professor of the History of Art*

EDWARD J. PHELPS, LL.D., *Professor of Law*

HUBERT A. NEWTON, LL.D., *Secretary, and Professor of Mathematics*

GEORGE J. BRUSH, LL.D., *Professor of Mineralogy*

SAMUEL W. JOHNSON, M.A., *Professor of Theoretical and Analytical
Chemistry*

WILLIAM H. BREWER, PH.D., *Professor of Agriculture*

JOHN E. CLARK, M.A., *Professor of Mathematics*

DANIEL C. EATON, M.A., *Professor of Botany*

ARTHUR M. WHEELER, M.A., *Professor of History*

JOHN F. WEIR, N.A., M.A., *Professor of Painting and Design*

J. WILLARD GIBBS, PH.D., LL.D., *Professor of Mathematical Physics*

CHARLES B. RICHARDS, M.A., *Professor of Mechanical Engineering*

ARTHUR W. WRIGHT, PH.D., *Professor of Experimental Physics*

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OTHNIEL C. MARSH, PH.D., LL.D., *Professor of Palaeontology*

EUGENE L. RICHARDS, M.A., *Professor of Mathematics*

JOHN H. NIEMEYER, M.A., *Professor of Drawing*

TRACY PECK, M.A., *Professor of Latin*

ADDISON E. VERRILL, M.A., *Professor of Zoology*

WILLIAM G. SUMNER, LL.D., *Professor of Political and Social Science*

• REV. GEORGE T. LADD, D.D., *Professor of Philosophy*

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JULES LUQUIENS, PH.D., *Professor of Modern Languages*

SIDNEY I. SMITH, M.A., *Professor of Comparative Anatomy*

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HENRY S. WILLIAMS, PH.D., *Professor of Geology*

HENRY A. BEERS, M.A., *Professor of English Literature*
 A. JAY DUBOIS, PH.D., *Professor of Civil Engineering*
 BERNADOTTE PERRIN, PH.D., LL.D., *Professor of Greek*
 EDWARD S. DANA, PH.D., *Professor of Physics*
 THOMAS D. SEYMOUR, LL.D., *Professor of Greek*
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 ALBERT S. COOK, PH.D., L.H.D., *Professor of English*
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 EDWARD P. MORRIS, M.A., *Professor of Latin*
 RUSSELL H. CHITTENDEN, PH.D., *Professor of Physiological Chemistry*
 ARTHUR T. HADLEY, M.A., *Professor of Political Economy*
 SAMUEL L. PENFIELD, PH.B., *Professor of Mineralogy*
 HORACE L. WELLS, PH.B., *Professor of Analytical Chemistry and Metallurgy.*
 THOMAS D. GOODELL, PH.D., *Professor of Greek*
 EDWARD W. HOPKINS, PH.D., *Professor of Sanskrit and Comparative Philology*
 ARTHUR H. PALMER, M.A., *Professor of German*
 HORATIO M. REYNOLDS, B.A., *Professor of Greek*
 GEORGE M. DUNCAN, M.A., *Professor of Philosophy*
 FRANK K. SANDERS, PH.D., *Professor of Biblical Literature*
 EDWARD G. BOURNE, PH. D., *Professor of History*
 HORATIO W. PARKER, M.A., *Professor of Music*

OTHER INSTRUCTORS

REV. SAMUEL HARRIS, D.D., LL.D., *Professor of Systematic Theology*
 REV. GEORGE P. FISHER, D.D., LL.D., *Professor of Ecclesiastical History*
 WILLIAM C. ROBINSON, LL.D., *Professor of Law*
 REV. CORNELIUS L. KITCHEL, M.A., *Instructor in Greek*
 JOHN P. C. FOSTER, M.D., *Instructor in Anatomy*
 WILLIAM BEEBE, B.A., *Assistant Professor of Mathematics and Astronomy*
 REV. EDWARD L. CURTIS, PH.D., D.D., *Professor of Hebrew*
 HENRY R. LANG, PH.D., *Assistant Professor of the Romance Languages*
 GEORGE L. FOX, M.A., *Lecturer on Municipal Administration*

- REV. WILLIAM F. BLACKMAN, PH.D., *Professor of Christian Ethics*
CHARLES E. BEECHER, PH.D., *Assistant Professor of Palaeontology*
SAMUEL E. BARNEY, C.E., *Assistant Professor of Civil Engineering*
FREDERICK WELLS WILLIAMS, B.A., *Instructor in History*
JAY W. SEAVER, M.D., *Associate Director of the Gymnasium*
EDWARD V. RAYNOLDS, D.C.L., *Lecturer on Constitutional Law*
FRANK C. PORTER, PH.D., *Professor of Biblical Theology*
E. HERSHEY SNEATH, PH.D., *Assistant Professor of Philosophy*
ROBERT L. TAYLOR, B.A., *Instructor in French*
LOUIS V. PIRSSON, PH.B., *Assistant Professor of Inorganic Geology*
WILLIAM G. ANDERSON, M.D., *Associate Director of the Gymnasium*
GUSTAVE F. GRUENER, B.A., *Assistant Professor of German*
HARLEY F. ROBERTS, M.A., *Tutor in Latin*
JAMES J. ROBINSON, PH.D., *Instructor in Latin*
EDWARD W. SCRIPTURE, PH.D., *Instructor in Experimental Psychology*
WILBUR L. CROSS, PH.D., *Instructor in English*
WARREN A. ADAMS, B.A., *Instructor in German*
JOHN C. SCHWAB, PH.D., *Assistant Professor of Political Science*
THOMAS C. STEARNS, B.A., *Lecturer on the History of Philosophy*
A. GUYOT CAMERON, PH.D., *Assistant Professor of French*
REV. ARTHUR FAIRBANKS, PH.D., *Instructor in Comparative Religion*
CARLETON L. BROWNSON, B.A., *Tutor in Greek*
ROBERT N. CORWIN, PH.D., *Instructor in German*
WILLIAM L. PHELPS, PH.D., *Instructor in English Literature*
WILLIAM A. SETCHELL, PH.D., *Instructor in Biology*
ALFRED J. WAKEMAN, PH.D., *Instructor in Analytical Chemistry*
HANNS OERTEL, PH.D., *Instructor in Comparative Philology*
IRVING FISHER, PH.D., *Assistant Professor of Political Economy*
JAMES P. PIERPONT, PH.D., *Instructor in Mathematics*
EDWARD F. BUCHNER, PH.D., *Instructor in Pedagogy and Philosophy*
REV. WILLIAM S. MORGAN, B.A., B.D., *Lecturer on the History of
Philosophy*
REV. HARLAN CREELMAN, PH.D., *Instructor in Biblical Literature*
HENRY T. FOWLER, B.A., *Assistant in Biblical Literature*
JOSEPH BOWDEN, JR., B.A., *Tutor in Mathematics*
HENRY A. BUMSTEAD, B.A., *Instructor in Physics*
WILLIAM T. H. HOWE, PH.B., *Instructor in Chemistry*

ADMINISTRATIVE COMMITTEE

WITH CONSULTATION HOURS

- REV. TIMOTHY DWIGHT, D.D., LL.D., PRESIDENT,
Room 7, Treasury Building, daily, 10.30 A. M. to 12 M.
- ANDREW W. PHILLIPS, PH.D., DEAN, and *Professor of Mathematics*,
90 High street, daily, except Saturday, 2.30 to 4 P. M.
- HUBERT A. NEWTON, LL.D., *Professor of Mathematics*,
238 Prospect street, daily, 2 to 3 P. M.
- GEORGE J. BRUSH, LL.D., *Director of the Sheffield Scientific School*,
Room 3 Sheffield Hall, daily, 10 A. M. to 12 M.
- ARTHUR M. WHEELER, M.A., *Professor of History*,
C2 Osborn Hall, Monday and Friday, 10.30 A. M. to 12.30 P. M.
- CHARLES B. RICHARDS, M.A., *Professor of Mechanical Engineering*,
Room 112 Winchester Hall, 9 A. M. to 12 M., Wednesday and Saturday.
- REV. GEORGE T. LADD, D.D., *Professor of Philosophy*,
B1 Osborn Hall, Tuesday and Wednesday, 9.35 to 10.20 A. M.
- THOMAS D. SEYMOUR, LL.D., *Professor of Greek*,
Room 121 North College, daily, 11 A. M. to 12 M.
- ALBERT S. COOK, PH.D., L.H.D., *Professor of English*,
135 Elm street, Wednesday and Friday, 10.30 to 11.30 A. M.
- HENRY W. FARNAM, R.P.D., *Professor of Political Economy*,
43 Hillhouse ave., daily, 2 to 3 P. M.
- RUSSELL H. CHITTENDEN, PH.D., *Professor of Physiological Chemistry*,
Room 64 Sheffield Biological Laboratory, Monday, Tuesday, Wednesday, and Thursday, 9 A. M. to 12 M.
- ARTHUR T. HADLEY, M.A., *Professor of Political Economy*,
Room E2 Osborn Hall, Saturday, 10.30 A. M. to 1 P. M.
- FRANK K. SANDERS, PH.D., *Professor of Biblical Literature*,
Room 184 Lyceum, Wednesday and Friday, 11 A. M. to 12 M.

GENERAL STATEMENT

ORGANIZATION

The Graduate Department of Yale University forms a part of the Department of Philosophy and the Arts, which was first formally organized in 1847 for scientific and graduate instruction, but now includes Yale College, the Sheffield Scientific School, the Art School, and the Department of Music.

The degrees of Doctor of Philosophy and Civil Engineer were first offered in 1860, the degree of Dynamical or Mechanical Engineer in 1873, and that of Master of Arts (previously given without evidence of study) in 1874.

The professors in the several sections of the Department of Philosophy and the Arts together constitute the Faculty of the Graduate Department. The general oversight of graduate instruction and graduate students is entrusted to the Dean and the Administrative Committee, who may be called upon for information and advice. Students are expected to report to the Dean soon after reaching New Haven.

ADMISSION AND REGISTRATION

Graduates of this and other Colleges and Universities, and (in exceptional cases, by special permission) other persons of liberal education, who are at least eighteen years old, are received as students for longer or shorter periods, with or without reference to the attainment of a degree.

All graduate students who are not regularly enrolled in any other department of the University, are required to register their names at the office of the Dean at the beginning of each year of study.

The degree of Doctor of Philosophy with the courses of the Graduate Department leading thereto is open to candidates without distinction of sex.

INSTRUCTION

Courses of study are offered in the following departments :

PSYCHOLOGY, ETHICS, AND PHILOSOPHY.
POLITICAL AND SOCIAL SCIENCE, AND HISTORY.
ORIENTAL LANGUAGES AND BIBLICAL LITERATURE.
CLASSICAL PHILOLOGY.
MODERN LANGUAGES AND LITERATURES.
NATURAL AND PHYSICAL SCIENCE.
PURE AND APPLIED MATHEMATICS.
THE FINE ARTS.
MUSIC.
PHYSICAL CULTURE.

Instruction is given partly by lectures, partly by recitations and by oral and written discussions, partly by directing courses of reading, and partly by work in the laboratories and with instruments.

The attention of teachers who desire to fit themselves more thoroughly for a higher grade of professional work is called to the advantages offered by this department for pedagogical instruction and discipline. In addition to the special and advanced study of the subjects in which the graduate student desires instruction, and the pursuit of courses in psychology, ethics, philosophy, and of other courses cognate with pedagogy, opportunity will be afforded to observe the actual practice in the class-room, as well as the organization of the different departments of the University and their methods of work.

CLUBS

In various voluntary associations, instructors and students meet together periodically for the reading of papers, oral discussions, etc.; such are :

THE CLASSICAL CLUB.
THE MATHEMATICAL CLUB.
THE POLITICAL SCIENCE CLUB.
THE PHILOSOPHICAL CLUB.
THE SEMITIC AND BIBLICAL CLUB.
THE COMPARATIVE RELIGION CLUB.
THE MODERN LANGUAGE CLUB.
THE ENGLISH CLUB.
THE PHYSICS JOURNAL CLUB.

FEEES AND EXPENSES

The fee for instruction is generally one hundred dollars ; but it may be more, or less, according to the courses pursued and the amount of instruction received.

Board is obtained at prices varying from three and a half to eight dollars a week. The average price is under five dollars.

A list of suitable rooms may be found at the Dean's office.

LIBRARIES AND READING ROOMS

Students have the free use of all the Libraries of the University. The UNIVERSITY LIBRARY contains about 170,000 volumes, and many thousands of unbound pamphlets. Its READING ROOM contains the books most important for daily consultation and reference, together with scholarly periodicals. Of current periodical publications, including publications of learned societies, the Library receives an unusually large number,—the foreign serials alone being not less than five hundred.

The LINONIAN AND BROTHERS LIBRARY contains over 30,000 volumes of the best current literature.

THE COLLEGE READING ROOM receives fifty-two daily newspapers, American and foreign, over sixty weeklies, and about seventy other periodicals—in addition to the periodicals received at the University Library. Students are admitted to the College Reading Room on payment of an annual fee of two dollars.

THE SHEFFIELD SCIENTIFIC SCHOOL LIBRARY contains 6,000 volumes, largely mathematical.

THE ART SCHOOL LIBRARY contains about 500 volumes of expensive illustrated works.

THE LOWELL MASON LIBRARY contains 4,000 volumes of music.

The Peabody Museum, the Observatory, and the several Laboratories have valuable technical libraries.

Several of the departments of study (the Classical, English, Political Science, and Historical) have special libraries of standard works for the use of advanced students.

The whole number of volumes in the several libraries of the University is over 220,000.

Dwight Hall, the headquarters of the Young Men's Christian Association, is provided with a good library and a pleasant reading room, besides the halls used for religious meetings.

A parlor and study-room at 135 Elm street is fitted up for the special use of women studying in the graduate department.

LABORATORIES, MUSEUMS, AND COLLECTIONS

The Peabody Museum of Natural History.

The Physical, the Chemical, the Biological, and the Engineering Laboratories of the Sheffield Scientific School.

The Sloane Physical, the Kent Chemical, and the Psychological Laboratories of Yale College.

The collections of the School of Fine Arts.

The collections of coins in the University Library, and various collections of models, casts, and photographs used in the teaching of mathematics and in other departments of instruction.

LECTURES AND CONCERTS

The following courses of public lectures and concerts are open to the students of the University :

THE MECHANICS' COURSE.

THE ART COURSE.

THE THEOLOGICAL SCHOOL LECTURE COURSES.

THE DWIGHT HALL COURSE.

THE PHI BETA KAPPA COURSE.

THE KENT CLUB COURSE.

THE UNIVERSITY CHAMBER CONCERTS.

THE UNIVERSITY SYMPHONY CONCERTS.

DEGREES

THE DEGREE OF DOCTOR OF PHILOSOPHY is conferred upon those who, after having taken a Bachelor's degree (implying a course of undergraduate study equivalent to that pursued in the Academical Department), and having studied in this department for not less than two years, shall have passed a satisfactory final examination and presented a thesis giving evidence of high attainment in the branches of knowledge pursued. The thesis must be deposited at the Library for public inspection, not later than June 1. The degree is not given, upon examination, to those whose studies are pursued elsewhere. The requirements for a degree in many cases exact of the student more than two years of labor ; especially when the course of undergraduate study has been less than four years. A good knowledge of Latin, German, and French is required in all cases, unless, for some very exceptional reasons, the candidate be excused by the Faculty. The fee for graduation is ten dollars.

THE DEGREE OF MASTER OF ARTS is conferred on Bachelors of Arts of Yale College or of other colleges, of two years' standing or upwards, who have given to the Faculty

of the Academical Department evidence of having made satisfactory progress in liberal studies after receiving their first degree. Such evidence may be furnished by one year's systematic study (not professional) in New Haven, under the direction of the Academical Faculty, followed by an examination. Graduates of other colleges can obtain the degree only by residence as thus described.

Such Bachelors of Arts of *Yale College* as may not choose to reside at the College for the prosecution of study may show at any time, not less than three years after graduation, by their printed essays, or by submitting to special examinations, that they have spent a year in liberal (and non-professional) study, and are worthy of recommendation for this degree.

A committee of the Faculty is appointed (consisting for the present year of Professors Newton and Wheeler), to whom candidates for this degree must submit their proposed courses of study for approval by the first of November in each year; and the evidence of a year's study must be submitted to the same committee by June 1.

In the case of resident students, the charge for instruction will usually be one hundred dollars, with a fee of ten dollars for the degree. In the case of non-residents, the fee for examinations and the degree will usually be twenty-five dollars.

THE DEGREES OF CIVIL ENGINEER AND MECHANICAL ENGINEER are conferred on Bachelors of Philosophy who have taken the first degree in Engineering study, and who pursue a higher course under the direction of the Governing Board of the Sheffield Scientific School, for at least two years, sustaining a final examination, and giving evidence of their ability to design important constructions and to make the requisite drawings and calculations. The fee for graduation is five dollars.

FELLOWSHIPS AND SCHOLARSHIPS

FIVE FELLOWSHIPS yielding four hundred dollars each, and twenty Scholarships yielding one hundred dollars each, have been created by the Corporation out of the income of University funds. These fellowships and scholarships are open to graduates of all colleges; but in the case of the fellowships, preference is given to those who have already spent at least one year in graduate study. Candidates for these appointments should send their applications, accompanied by letters of recommendation and other evidences of the excellence of their work already accomplished, to Professor George T. Ladd, Chairman of the Committee on Fellowships and Scholarships, not later than May 1.

COURSES OF INSTRUCTION

Courses marked with an asterisk (*) are undergraduate courses, but are open to graduate students, provided that they have the consent of the instructor and the approval of the Faculty.

The number of hours stated means, in every case, hours of exercises, lectures, or recitations, each week.

The hours named for the exercise are subject to change.

COURSES OF INSTRUCTION

I. PSYCHOLOGY, ETHICS, AND PHILOSOPHY

Professor LADD :—

1 *Introduction to Philosophy.* 2 hrs. both terms.

This course is designed for all graduate students who desire any acquaintance with philosophy, whether they make it a matter of special study or not. It may be taken for purposes of general culture; since it provides for a brief survey of all the principal problems of philosophy, in an elementary way. One hour each week is occupied by the instructor with a lecture. The other exercises consist of discussions and reading of papers, in which each member of the class is expected to take part. The course follows the order of topics in Ladd's *Introduction to Philosophy*, which is supplemented by the study of several of Lotze's *Philosophical Outlines*, and by references to other books.

During the latter half of the year special emphasis is laid upon the philosophy of life and of conduct, in connection with the discussion of problems in Ethics, Aesthetics, and the Philosophy of Religion.

[Tuesday and Saturday, 8.30 A. M.]

*2 *Philosophical Anthropology.* 2 hrs. both terms.

This course will furnish an Outline Study of Man, his body and mind in their relations, his relations to nature, to his fellows, and to God; and his development in history. Lotze's *Microcosmus* is read, and the reading is accompanied by lectures, and by papers and discussions.

[Tuesday and Wednesday, 9.30 A. M.]

3 *Ethics.* 2 hrs. both terms.

The principal topics in the philosophy of conduct—such as the nature and validity of moral consciousness, the freedom of will, the nature and grounds of the morally right—will be discussed in a course of lectures. The same topics will be studied as they are presented by the principal modern authorities, especially by Sidgwick, *The Methods of Ethics*, Martineau, *Types of Ethical Theory*, Janet, *La Morale*, and Bowne, *Principles of Ethics*. Papers and discussions by the class.

[Tuesday, 7.15 to 9 P. M.]

- 4 *Philosophical Seminary.* 2 hrs. both terms.

This course will be conducted in the *Seminary* method, and the work will be chiefly research, the results of which will be presented in papers to be discussed by the class. The answers which the different "schools" of thinkers have given to the fundamental problems of philosophy will be studied historically and critically. Riehl's *Philosophischer Kriticismus* will be used as furnishing, in some sort, a guide to the work of research.

[Wednesday, 3.15 to 5 P. M.]

Professor DUNCAN :—

- 5 *Advanced Psychology.* 2 hrs. both terms.

A detailed study of the phenomena of mental life from the scientific point of view. James's *Principles of Psychology* will be read, with constant reference to Ladd's *Psychology, Descriptive and Explanatory*, Sully's *Human Mind*, and the works of other leading modern authors; and the reading will be accompanied by papers, discussions, and lectures.

[Wednesday and Saturday, 10.30 A. M.]

- 6 *Popular Discussions in Philosophy.* 1 hr. both terms.

This is a course in *philosophical criticism*, and is intended to develop and train the critical spirit; to deepen interest in the more profound themes of philosophy by showing their connection with popular life and thought; and to vindicate sound psychology and a theistic and Christian philosophy from the perennial misconceptions to which they are exposed. To this end some of the popular philosophical papers of Huxley, Tyndall, Clifford, Spencer, and others will be read and freely discussed.

[Monday, 10.30 A. M.]

- *7 *History of British Philosophy.* 2 hrs. both terms.

An elementary study of the development of philosophical thought in Great Britain from Bacon to the present time. The course consists of lectures, expository and critical, by the instructor, and the cursory reading by the students of philosophical masterpieces: Bacon's *Novum Organum*; Locke's *Essay Concerning Human Understanding*—selections; Berkeley's *Principles of Human Knowledge*; Hume's *Inquiry Concerning Human Understanding*; Reid's *Inquiry into the Human Mind*; Hamilton's *Metaphysics*—selections; Mill's *Examination of Hamilton*—selections; Spencer's *First Principles*. This course will include brief notices of contemporary continental thought,

and especial attention will be given to the tendencies in modern British thought known as scepticism and agnosticism, and to the evolution philosophy as expounded by Herbert Spencer. The course is intended for purposes of general culture, but it also aims to be an introduction to the special study of philosophy in its various branches and problems.

[Wednesday, 8.30 A. M., and Saturday, 11.30 A. M.]

8 *The Philosophy of Hegel.* 1 hr. both terms.

The somewhat thorough study of Hegel's system of philosophical thinking is undertaken. The system is approached in the order of the topics treated in the *Propaedeutik*. That work and the smaller *Logic* are read and discussed, and as much of the Phenomenology of Mind, History of Philosophy, Philosophy of History, etc., as time permits.

[Thursday, 10.30 A. M.]

9. *Locke's Essay concerning Human Understanding.* 1 hr. both terms.

A careful study of this great classic will be undertaken and an attempt made to estimate its influence upon subsequent thought. Professor Fraser's new critical edition of the *Essay* and Mr. Langley's translation of Leibnitz's *Critique of Locke* will be used, and Leibnitz's criticisms will be compared with those of the more important of Locke's other expounders and critics, such as Lee, *Anti-Scepticism*; Cousin, *Philosophy of Locke*; Green, *Introduction to Hume*; Webb, *Intellectualism of Locke*, etc.

[This course will be omitted in 1895-6, but will be given in 1896-7].

Assistant Professor SNEATH:—

10 *Philosophical Scepticism.* 2 hrs.

A historical and critical study of philosophical scepticism, with special reference to the construction of a theory of knowledge. The course will involve a study of the scepticism of the Sophists, the Earlier and Later Pyrrhonists, the Middle and New Academies; the Scepticism of Augustine and Descartes; the Scepticism of Hume and Kant; the Positivism of Comte and Lewes; and the Agnosticism of Spencer. The causes of scepticism will be investigated. Special attention will be given to the nature and significance of error. The course will close with an inquiry into the psychology and philosophy of knowledge. The methods of study will be those of the *Seminary*.

[Tuesday, 3 to 5 P. M.]

*11 *Continental Philosophy.* 2 hrs.

An historical survey of the history of modern philosophy on the continent from Descartes to the present time. The following works will be read: Descartes's *Meditations*; Spinoza's *Ethics*—selections; Leibnitz's *Monadology* and *Philosophical Opuscles*; Kant's *Prolegomena to any Future Metaphysic*; Cousin's *The True, The Beautiful, The Good, The Fine*; Hegel's *Philosophy of Mind*; Lotze's *Outlines of Metaphysics*; also lectures and discussions.

[Wednesday, 11.30 A. M., and Saturday, 8.30 A. M.]

*12 *Advanced Ethics.* 1 hr.

An historical and critical study of ethical theory. Selections from the following representative works will be read: Kant's *Metaphysic of Morals* and *Critique of Practical Reason*; Mill's *Utilitarianism*; Hegel's *Ethics* (Sterrett); Spencer's *Data of Ethics*; also lectures and discussions. The course will close with a study of the philosophy of theism.

[Wednesday, 9.30 A. M.]

Dr. SCRIPTURE :—

*13 *Physiological and Experimental Psychology.*

2 hrs. both terms.

Elementary presentation of the chief facts of the anatomy and physiology of the nervous system and the sense organs. Psychology of sight, hearing, touch, memory, emotion, volition, etc. The course will be thoroughly illustrated by physiological and psychological experiments, demonstrations, lantern-views, models, charts, microscope slides, and dissections. Text-book: Ladd's *Outlines of Physiological Psychology*.

[Tuesday and Thursday, 2 P. M.]

*14 *Laboratory Course in Psychology.* 2 hrs. both terms.

Practical work in the laboratory with instruction in the fundamental methods of psychology.

[Monday, 2 to 4 P. M.]

*15 *Psychology; advanced course.* 2 hrs. both terms.

General principles of experiment and measurement; qualitative statistics, means, characteristic variations; quantitative statistics; measurements of sight, hearing, touch; time-relations of mental phenomena; action and volition; memory; emotion; principles of laboratory instruction and economy.

Practical training in psychological measurements and statistics with instruction in the adjustment of measurements, calculation

of errors of apparatus, elimination and compensation of disturbing psychological influences, construction and care of apparatus, use of tools, lathe-work, vise-work, etc.

No previous acquaintance with psychology is required, but a proper understanding of the subject requires a judicious selection of other courses in psychology, physics, and mathematics.

This course is given in alternate years.

[Wednesday, 2 to 4 P. M.]

16 *Educational Psychology.* 1 hr. both terms.

Application of modern psychological principles to educational subjects; outlines of the psychology of touch, its use in education; motor abilities, accuracy of movement, fundamental principles of writing and drawing; hearing, training the ear, hearing and singing, fundamental principles of instruction in music; sight, color-teaching; space, form-teaching, drawing, modeling; attention, concentration and distraction, accessories of the school-room, laws for developing attention; memory, analysis into its components, experimental study of, calculation of results, development and training, time of study; imagination, use, necessity of development and repression, fables, children's books, toys; emotions, development and repression, will, action, reflex, automatic, instinctive, voluntary, training; child-study on a scientific basis, principles of anthropometry and psychometry, tests and measurements adapted to rapid work in schools, record-blanks, use of results; psychological development of the child, beginnings of instruction; economy in education, greatest results from least efforts, correlation and concentration of instruction; various educational subjects from a psychological standpoint,—amusement, play, toys, picture-books, object-lessons, etc. The course is illustrated with models, charts, books, experiments, lantern views, and educational material from Europe and America.

This course will probably be omitted in 1896-97.

[Tuesday, 5 P. M.]

17 *Research Work in Psychology.* 4 hrs. both terms.

Participants in this course are either investigators or assistants. For assistants the object is such a training in accurate introspection, observation, experimenting and the art of research as is desirable for the general psychologist. This work is open to all. Only those who have had work equivalent to courses 13, 14, and 15, and have already served as assistants are permitted to undertake independent investigations. The results of

all investigations belong to the archives of the laboratory. Those who undertake investigations thereby agree to prepare the results for publication, subject to approval, in *Studies from the Yale Psychological Laboratory*. Results may be used as theses for the degree of Ph.D. The psychological examination of a candidate for the doctorate, for the present year, extends over courses 13, 14, and 15, or their equivalents.

Dr. BUCHNER :—

18 *Philosophy of History.* 2 hrs. both terms.

This course gives a survey of the chief philosophical attempts to comprehend human history, and endeavors to estimate them from a critical point of view. The leading ideas of antique and oriental civilizations will not be omitted, but special emphasis will be placed on the philosophical construction of history in various systems of modern thought. This course will furnish to the student of philosophy opportunity to see philosophical principles in concrete applications, and to the student of history critical aid supplementary to the technique of his science. Lectures and papers will proceed on the basis of Flint's *Philosophy of History* (first edition mainly), but may be modified according to the needs and wishes of the class.

19 *National Systems of Education.* 2 hrs. both terms.

Recent national movements in education in Austria, Belgium, England, France, Germany, Italy, Japan, Sweden, and other countries will be studied historically and comparatively with special reference to the present condition and problems of education in the United States. Lectures, research papers, and discussions. Boone's *Education in the United States* and Fouillée's *Education from a National Standpoint* will be read at the beginning and the end of the year, respectively. The remaining time will be given to the consideration of foreign systems to be presented as results of research by members of the class.

[Tuesday and Friday, 9.30 A. M.]

*20 *History of Educational Theories and Practice*

This course is designed to present, in an elementary and summary way, the principal educational problems in the light of their historic evolution, to acquaint the student with the most important educational classics, and to aid him in the acquisition of rules for guidance in the actual work of teaching.

The study of the history of education and teaching in antiquity and especially since the Renaissance, based on Compayre's *History of Pedagogy*, and the reading of a few of the modern classics, will be followed by the reading of a brief manual on teaching.

[Tuesday and Thursday, 3 P. M.]

Dr. FAIRBANKS :—

21 *History of Religion.* 2 hrs. 1st term.

In this introductory course the religions of India and Persia are made the basis of the work. The student is expected to become familiar with translations of the original documents, and with some of the more important discussions of the subject. The aim of this course is to trace in the field studied some of the laws which govern the development of religion, and the factors which tend to aid or hinder this development. The course also includes a discussion of the phenomena of religion, rites and ceremonies, objects of worship, etc., and the connection of these with religion itself.

[Tuesday and Wednesday, 9.30 A. M.]

22 *The Beginnings of Religion.* 1 hr. 2d term.

Two or three types of religion among uncivilized tribes are studied to show the forms which religion may assume in the lowest stages of civilization ; this is followed by a discussion of the relation between savage religion and primitive religion, and by a criticism of the different theories as to the origin of religion.

[Wednesday, 9.30 A. M.]

23 *Semitic Religion.* 1 hr. 2d term.

Lectures and readings on the religions of the Semitic peoples with special reference to the religion of Israel.

[Tuesday, 4 P. M.]

24 *Comparative Religion (advanced course).* 2 hrs. 2d term.

A study of the different forms of sacrifice in their origin, development, and meaning. The object of the course is to bring out the different conceptions of man's relation to God which have been held by different races and different ages.

[Omitted in 1895-96].

Mr. STEARNS :—

25 *Greek Philosophy.*

The aim of this course will be to cover the main period of Greek thought. The first few lectures will be devoted to a summary review of Pre-Socratic philosophy preparatory to the study of Plato, which will constitute the main work of the year. Nearly all the well-authenticated Dialogues will be read, commented upon, and thoroughly discussed, with a view to determining as far as possible Plato's opinions upon the principal philosophical questions. The course will end with the *Metaphysics* of Aristotle under the same mode of treatment. Jowett's translation of the Dialogues and MacMahon's translation of the *Metaphysics* will be the text-books used.

Mr. MORGAN :—

26 *Critique of Pure Reason.* 2 hrs. both terms.

This course will consist in a critical examination, exposition, and discussion of the *Critique of Pure Reason* from the standpoint of Psychology and Epistemology. The first and second editions will be carefully compared and the important changes fully discussed. Constant reference will be made to the *Prolegomena* and especially to the *Critique of Practical Reason*. Toward the close of the year an endeavor will be made to summarize Kant's view, with reference to some of the most important points in his system, viz: "The thing in itself," "Causation," etc.

The course will be conducted by lectures and short papers.

The following courses in the Divinity School are open also to graduate students of philosophy, on obtaining, in each case, permission from the instructor.

Professor HARRIS :—

27 *The Philosophical Basis of Theism and the Self-Revelation of God.* 2 hrs. both terms.

A course of lectures on these topics, accompanied by a study of text-books bearing the same names. The course is primarily designed for Juniors in the Divinity School.

[Tuesday and Thursday, 5 P. M.]

- 28 *Selected Topics in the Philosophy of Religion of special interest at the present time.* 1 hr. both terms.

This course is primarily designed for graduates of the Divinity School.

[Monday, 5 P. M.]

Professor BLACKMAN :—

- 29 *Christian Ethics.* 2 hrs. both terms.

A study of the ethical teachings of the New Testament, and of Christian Theology, compared with those of Greek Philosophy. The course consists of lectures by the instructor, and of readings from Weiss's *Einleitung in die Christliche Ethik*, Jodl's *Geschichte der Ethik*, Paulsen's *System der Ethik*, and the works of Rothe, Dörner, Martensen, Pfleiderer, Martineau, Janet, and other authors.

II. POLITICAL AND SOCIAL SCIENCE AND HISTORY

Professor SUMNER :—

1 *The Industrial Revolution of the Renaissance Period.*

2 hrs. both terms.

A chapter in the history of the development of the industrial organization. The industrial element in the renaissance. The transition from medieval to modern society in its causes, new elements, effects on classes, effects on economic doctrine. Changes imposed on the industrial organization; world commerce, land tenure, handicrafts, banking and money.

2 *The Beginnings of the Industrial Organization.*

2 hrs. both terms.

An ethnological study of the industrial organization from its earliest beginnings. Division of labor between the sexes and the special functions of each; regulation of industry; slavery; formation of capital; discoveries and inventions; domestication of animals and plants; money, etc.

[Those who take these two courses will be divided into two sections: those who desire only to attend the lectures, and those who take these courses as essential parts of their work for a degree. For the latter, required courses of reading will be set, papers will be called for from them on special topics, and examinations will be held.]

3 *The Fall and Rise of the Scandinavian Peasantry.*

About six lectures, at some convenient time during the year, on the peculiar contributions of Scandinavian history to a comparative analysis of feudalization, land tenure, and the differentiation of classes under the pressure of the State.

4 *Politics and Finance in the History of the United States.*

2 hrs. both terms.

A study of economic and political institutions and doctrines in the history of the United States, especially in their relations to, and effects on, each other. Those who take the course are supposed to be well acquainted with the civil history of the United States.

Not given in 1895-6.

5 *Anthropology.* 2 hrs. both terms.

A careful study of Ranke's *Der Mensch* as a text-book, with an examination of the separate topics by means of all the appropriate material.

Not given in 1895-6.

*6 *The Science of Society.* 2 hrs. both terms.

An elementary course, with text-book lessons and examinations, in Anthropology and Ethnology, with the origin of civilization and the development of institutions.

In connection with this will be given a course of lectures on Systematic Sociology as derived from Historical Anthropology and Ethnology.

Those who are able to read difficult French and German may join special divisions to read books in those languages. For such the course will count as a three-hour course. The text-books at the beginning of the year will be Tylor's *Anthropology*; Quatrefages's *Hommes Fossiles et Hommes Sauvages*; Lippert's *Kulturgeschichte* (2 vols., Stuttgart, 1887). Those who take the French or the German course will be responsible for providing themselves with the text-books.

[Monday and Thursday, 8.30 A. M.]

Professor FARNAM :—

7 *The Economics of Poor Relief.* 1 hr. both terms.

Lectures will be given on pauperism and on the history and theory of poor-relief. Considerable time will, however, be devoted to the reading and criticism of papers which the members of the class are expected to prepare, and an opportunity will be given to study the practical workings of some of the numerous charitable institutions of the city.

8 *The Modern Organization of Labor.* 2 hrs. 1st term.

These lectures will treat of the historical antecedents and the development during the nineteenth century of associations of wage-receivers. They will therefore include an account of the structures, aims, and methods of such societies in different countries, together with a discussion of their relations to the factory system, labor disputes, labor legislation, workingmen's insurance, provision for the unemployed, and other features of the modern industrial world.

[Wednesday and Friday, 11.30.]

9 *The Principles of Public Finance.* 2 hrs. 2d term.

A systematic survey of the means by which the expenditures of government are met, regard being had both to the economic principles involved and to the fiscal systems of modern states. Leading topics are: the budget, taxation (national and local), public debts, and state banks considered as aids to public credit.

[Wednesday and Friday, 11.30.]

Professor HADLEY :—

10 *Economic Problems of Corporations.* 1 hr. both terms.

This course deals with the growth of combinations, trusts, and monopolies; the difficulties connected with private and with public management of such monopolies; the control of services rendered and prices charged; with especial reference, under the latter head, to the subject of railroad regulation.

11 *The Relation between Economics and Ethics.*

1 hr. both terms.

A historical study of the development of moral and legal standards in their relations to one another, followed by criticisms of various schemes of social policy and legislation. No one will be admitted to this class who is not well grounded in the general principles of economics. The members of this class are expected to prepare critical papers as an essential part of the work of the class.

The topics treated in 1895-96 will be: Wages, Factory Arts, Foreign Competition and its effects on labor, the Eight-Hour Movement, Strikes, Arbitration, Coöperation, Government Management of Industry, Schemes for the Abolition or Mitigation of Poverty. In 1896-97 it is intended to treat the topics of Sales, Speculation, Profits, Interest, Rent, Currency, Credit, Monopolies, and Commercial Crises.

Professors HADLEY and FISHER.

*12 *Economics (General course.)* 3 hrs. both terms.

A thorough course in the elements of the science. Two hours a week will be devoted to text-book work with Professor Fisher, involving recitation room drill in the general principles. The third hour will be occupied by a lecture from Professor Hadley on the application of these principles to financial and industrial problems of the day.

Professors HADLEY and SCHWAB.

*13 *Economic Policy.* 5 hrs. both terms.

A second-year course in Economics for those who wish to give special attention to the subject. None will be admitted to the course who are not already familiar with the elements of economic theory.

For two-thirds of the year, Professor Schwab will give instruction in I, the principles of money, credit, and banking. The principles will be illustrated by lectures upon the monetary and banking history of the world, in particular of the United States. Special attention will be given to the currency problems of the present time. II, The principles of finance. Lectures will cover the subject of government revenue and expenditure, and the principles involved in investment securities. III, International trade, history of the tariff legislation and industrial development of the United States. The text-books will be: Jevons's *Money*, Dunbar's *Banking*, Brough's *Money*, Adams's *Public Debts*, Taussig's *Tariff History of the United States*, Sumner's *Problems*, and Sumner's *Investment Securities*.

For one-third of the year Professor Hadley will deal with the growth of the modern industrial system, and the legislative problems connected with it. The text-books will be Hadley's *Railroad Transportation* and Jevons's *State in Relation to Labour*.

This course will be conducted in sections, and the work will involve a combination of lectures, recitations, and preparation of papers by the students.

[Every week-day but Saturday, 10.30 A. M.]

Professor BLACKMAN :—

14 *Social Science.* 2 hrs. both terms.

An introduction to the study and literature of Sociology, followed by a discussion of some important social problems, such as: Socialism, Communism, Individualism, and Anarchism, Races in the United States, Immigration, the City, the Wage System, the Defective and Dependent Classes, the Causes, Prevention, and Punishment of Crime, and Illiteracy.

15 *A Historical Study of Marriage and the Family.* 1 hr. both terms.

Assistant Professor SCHWAB :—

16 *United States Financial History.* 1 hr. both terms.

This course is intended for the further study by means of text-books, lectures, and informal discussions of the financial topics

taken up in the course on Economic Policy (13). Opportunity is given for the writing of theses on selected topics in the general field of the financial history of the United States.

[Thursday, 4.00 P. M.]

17 *United States Public Finance.* 1 hr. 1st term.

An application of the principles of public finance to the finances of the United States, especially to those of the States and cities. Leading topics will be: the spheres of expenditure and revenue of the different political units of the United States; their fiscal policy; an historical and critical study of their forms of revenue; the American system of State and local taxation in theory and in practice; State and local debt financing.

18 *The Finances of the Confederate States, 1861-1865.*

1 hr. 2d term.

Lectures on selected topics from the financial history of the Confederate States. Opportunity will be given for individual research, if desired.

Assistant Professor IRVING FISHER :—

19 *Mechanism of Prices and Currency.* 2 hrs. both terms.

I. Elementary Calculus, so far as necessary to show its use in economics. II. Analysis of price causation. Its analogies with liquid mechanics. III. The part played by the currency in prices, Bimetallism, statistical and historical applications, with especial reference to the experience of the United States, France, Austria, India, etc.

[Wednesday and Saturday, 10.30 A. M.]

Professor ROBINSON :—

*20 *Jurisprudence.* 2 hrs. 1st term.

The course consists of lectures and recitations on the following subjects: law in its relations to the origin, development, and government of political society; origin and development of customary law; relation of statute law to customary law; formation and development of codes of law; nature and origin of legal rights; principles of the law governing rights in land; principles of the law governing contract-rights; the law of remedies for the violation of rights; origin and procedure of courts of law and equity; criminal law. The instruction in this course is designed to present an historical and philosophical view

of the law in its great outlines, as common to all nations, and as particularly developed in the Anglo-Saxon race, and thus to serve as an introduction to the courses of Professor Phelps in Municipal, Constitutional, and International Law.

[Friday, 5 P. M., and Saturday, 12.30 P. M.]

Professor PHELPS :—

*21 *Law.* 2 hrs. 2d term.

The common law of this country. Constitutional law. International law. The instruction is by lectures based upon textbooks to be read in connection.

[Friday, 11.30 A. M., and Saturday 12.30 P. M.]

Dr. RAYNOLDS :—

22 *Constitutional Government.* 2 hrs. 2d term.

A comparative study of political institutions in Europe and America. Some of the principal matters to be considered are: the special features of state systems and composite states, including the various forms of union, federation, home-rule, and colonial relations; the constitutional character of the chief organs of the State, the relations between the royal or presidential authority and the representative assembly, and between executive and legislative functions; the organization of the administrative departments and the civil service; the administration of justice, with the relations of the courts to constitutional questions and to administrative discipline.

Mr. FOX :—

23 *Comparative Municipal Government.* 1 hr. both terms.

The subject will be treated rather from a practical than a historical point of view, and will have a close relation to the future work of the student as a citizen. Some of the subjects considered will be the sphere and functions of city government, existing and proposed; organization and methods of administration; relation to the higher legislature; attitude toward natural monopolies; sources of revenue and methods of expenditure. The leading types of American city government will be described, together with a survey of European cities. Original reports upon city charters will be required, and occasional debates will be held on questions of municipal policy.

Professor BREWER :—

24 *Physical Geography in its relation to History.*

1 hr. 1st half of 2d term.

A course of about ten lectures discussing the following topics : the relations of man to the region he inhabits ; physical geography as related to the development of civilization ; natural aids to the defence and protection of communities ; natural facilities for commerce ; the influence of natural conditions as now modified by science and invention.

[Tuesday, 10.30 A. M.]

Professor WHEELER :—

25 *History of Treaties since 1648.*

2 hrs. both terms.

26 *History of Institutions.*

2 hrs. both terms.

[Omitted in 1895-96.]

*27 *History of Europe since 1789.*

2 hrs. both terms.

Mainly political ; introductory to European politics of our day.

*28 *Investigation of special topics in European History.*

from 1789 to 1815.

2 hrs. both terms.

A general knowledge of the period, and ability to read French or German easily, are required.

[Wednesday, 11.30 A. M.]

Professor C. H. SMITH :—

29. *American History (Colonial).*

2 hrs. both terms.

Exploration and early settlement of North America, and colonial history to the close of the Revolutionary War. Selected topics are assigned for study, and the full course occupies two years ; but the part given in either year may be taken for that year only.

30 *American History (National).*

2 hrs. both terms.

Political and constitutional history of the United States. The selected topics occupy two years, but a part of them may be taken as a one-year course, as explained above.

Professor ADAMS :—

*31 *Medieval History.* 2 hrs. both terms.

The object of the course is to furnish an outline of the general history of Europe, and to follow the development of political, intellectual, and religious civilization through the period which lies between ancient and modern history.

32 *Medieval Institutions.* 2 hrs. both terms.

This course will extend through two years, and will consider the most important institutions of continental Europe between the fall of Rome and the sixteenth century. The student will be made acquainted with the literature of the subjects treated and with the collections of original material. He will be expected to investigate selected topics in the sources and to report to the class upon them, and especial attention will be paid to the principles of criticism and to methods of research.

The first year's course (*a*) is given in 1895-96.

a. The first year's course will cover early German institutions ; their modification under Roman influence ; the development of the papal power and its special institutions ; the institutions of Charlemagne's empire ; the origin and the final forms of feudalism ; and the beginnings of national governments.

b. The second year's course will include the growth of commerce and its political effects ; the rise of the communes and of the third estate ; the fall of the feudal system ; the growth of the absolute monarchy with the institutions developed in the process ; and the universities and other special features of the intellectual and religious revolution which closed the middle ages. [Course *b* is not given in 1895-96.]

Professors ADAMS and BOURNE :—

33 *Methods of Historical Research and Criticism.*

1 hr. both terms.

The first half of this course, under Professor Bourne, will consist of lectures and discussions on the principles of historical criticism, for which Bernheim's *Lehrbuch der historischen Methode* will serve as an outline. The second half, under Professor Adams, will consist of practical exercises in the study of selected historical documents, so arranged as to furnish examples of all the important points of method. The weekly exercises in this course may occupy two hours.

While primarily designed for students of history, this course will be of value to students of literature as an introduction to the historical method of criticism.

- *34 *English History.* 3 hrs. both terms.

Political and constitutional. Particular attention will be given to the development of political and legal institutions, and in the second half to the colonial expansion of England.

[Monday, Wednesday and Thursday, 9.30 A. M.]

Professor BOURNE :—

- 35 *English History from the accession of the Tudors.*

Constitutional and political. 2 hrs. both terms.

Especial attention will be given to the Constitutional history of the Puritan Revolution. This course is designed for those who have a good knowledge of the general history. An important part of the work will consist in the personal investigation of selected topics, for which the student will be sent to the sources.

- *36 *History of Europe from the Reformation to the French Revolution.* 2 hrs. both terms.

This course will deal mainly with the growth of the European State system, the influence upon Europe of the colonial expansion, and the political and intellectual movements preparatory to the Revolutionary epoch.

[Monday and Wednesday, 12.30 P. M.]

Mr. F. W. WILLIAMS :—

- *37 *Ancient Oriental Nations from the earliest times.*

2 hrs. both terms.

An outline history of the principal nations of antiquity, with some account of their social, political, and religious institutions. This course illustrates the connection of Biblical and profane history, and also treats of the Asiatic origins of European civilization.

[Monday and Thursday, 12.30 P. M.]

- *38 *Modern Asiatic History.* 2 hrs. both terms.

A course in some of the more important political and institutional problems of the Far East, designed chiefly for advanced students. It will involve a study of existing Asiatic peoples, principally those of India, Central Asia, China, and Japan, their governments, and their relations with European nations in recent times.

[Tuesday and Friday, 12.30 P. M.]

The following course in the Divinity School is also open, by the special permission of Professor Fisher, to graduate students :—

Professor FISHER :—

39 *General Church History.* 3 hrs. both terms.

This course comprises the following topics: The nature, divisions, and sources of Church History, with a review of the literature on the subject; the old or preparatory dispensation in its relation to Christianity; the condition of the Graeco-Roman world at the introduction of the Gospel; the establishment of Christianity, and the conflicts of the apostolic age; the spread of Christianity, including especially the conversion of the Roman Empire and of the Teutonic nations; the changes in ecclesiastical polity in the early centuries; the organization of Latin Christianity under the Papacy; the relations of the Papacy and the Church to civil society in the Middle Ages; the Protestant Reformation, with its causes and the systems of polity adopted by the different Protestant churches; Christian life, and its characteristic features in the successive eras (including the rise and subsequent history of monasticism); the history of Christian worship.

[Monday, Thursday, and Saturday, 10 A. M.]

[For courses on the Greek Historians and on the Athenian Commonwealth, see Classical Philology, IV, Courses 7, 19, 26.]

THE POLITICAL SCIENCE CLUB meets fortnightly for the reading and discussion of papers, and for reports on current literature. A convenient room in the new White dormitory is set apart for its use, and contains a department library which is accessible to the graduate students at all hours of the day. As the books are not allowed to be taken from the room, this library is particularly helpful to graduate students when they wish to refer to some authority which is temporarily withdrawn from the University library.

III. ORIENTAL LANGUAGES AND BIBLICAL LITERATURE

Professor HOPKINS :—

- 1 *Elementary Sanskrit.* 3 hrs. both terms.
Instruction in Sanskrit, beginning with Whitney's *Sanskrit Grammar*, and passing on to Lanman's *Reader*. Exercises in composition.
[Monday, Wednesday, and Friday, 11 A. M. to 12 M.]
- 2 *Advanced Sanskrit.* 3 hrs. both terms.
Selections from the Rig Veda and Brahmanic texts. The mss. and texts of the University library and of the American Oriental Society furnish ample material for original work.
[Monday, Wednesday, and Friday, 12 M. to 1 P. M.]
- 3 *History of Sanskrit Literature.* 2 hrs. both terms.
This course is intended only for those who have had at least one year's instruction in Sanskrit.
[Tuesday and Thursday, 12 M. to 1 P. M.]

President DWIGHT :—

- 4 *The Book of Revelation.* 1 hr. both terms.
A course of lectures, with a study of the book in the original Greek.
- *5 *The Gospels of Matthew, Mark, and Luke (English).* 1 hr. both terms.
A study of the three Gospels in connection with one another as related to their presentation of the Life of Jesus.
[Monday, 3 P. M.]
- *6 *The Gospel of John (English).* 1 hr. both terms.
A study of the Gospel with reference to the thoughts of the author and the teaching of Jesus.
[Monday, 11.30 A. M.]

Professor PORTER :—

- 7 *Jewish Literature.* 1 hr. both terms.
A study of the Palestinian Jewish Literature and Theology of the time of Christ. The course will consist of critical readings from the Old Testament Apocrypha and the Jewish Pseudepigrapha, with special attention to the origin and significance of the Apocryphical element in Jewish religious history and its relation to the beginning of Christianity.

Professor SANDERS and Dr. CREELMAN :—

*8 *Beginning Hebrew* (each year). 4 hrs. both terms.

The first term is devoted to the mastery of the elements of etymology and syntax, in connection with a detailed study of Genesis i-iv. The work of the second term is more diversified, including reading at sight, a careful but fairly rapid reading of easy historical passages with especial reference to forms, idioms, and simple syntax, and one hour per week of close grammatical work. After Easter, some lectures are given on the Hebrew language.

[Monday, Tuesday, Thursday, and Friday, 3 P. M.]

9 *Semitic Seminary* (each year). 2 hrs. both terms.

The investigation of linguistic themes and the discussion of texts in the various Semitic languages, with the view of promoting independent investigations by students. Open only to those who have taken at least two years of Semitic study.

Professor SANDERS :—

*10 *Hebrew Poetry, Law, History, and Prophecy* (each year). 2 hrs. both terms.

A study of the short poems found in the historical books of the Old Testament, stress being laid on the details of poetical form and on the principles of textual criticism. This is followed by a study of selections from the legal material of Exodus and Deuteronomy, from the histories of Samuel and Kings, and from the Minor Prophets ; the material being discussed from an historical and comparative as well as textual standpoint.

[Tuesday and Thursday, 2 P. M.]

11 *The Book of Micah*. 1 hr. both terms.

A close study of the book of Micah from the standpoint of the lower criticism, partly on the basis of Ryssel's *Untersuchungen*.

[Friday, 3 P. M.]

12 *Hebrew Syntax*. 1 hr. both terms.

A close study of the principles of syntax, making class room use of Harper's *Elements of Hebrew Syntax* and of Driver's *Tenses*, with references to other authorities. Toward the close of the year a few of the Psalms and some prophetic passages will be critically read with reference to a syntactical interpretation.

[Omitted in 1895-96.]

- 13 *The Qurʾān* (each year). 2 hrs. 1st term.

A rapid but careful reading of selected Suras of the *Qurʾān*, in connection with a study of the material of the whole *Qurʾān*, from a religious point of view, lectures being given on Islam.

[Wednesday, 8.15 to 10.15 A. M.]

- 14 *Arabic Poetical Literature* (each year). 2 hrs. 2d term.

Selections from the *Muʿallaqāt* and other poetical literature, accompanied by lectures on the history of Mohammedanism and by sight-reading in the *Thousand and One Nights*.

[Wednesday 8.15 to 10.15 A. M.]

- 15 *Assyrian and Babylonian Inscriptions* (each year).

2 hrs. 1st term.

Selected inscriptions from the annals of the later Assyrian kings and of the New-Babylonian empire.

[Monday and Tuesday, 8.15 A. M.]

- 16 *Assyro-Babylonian History and Literature* (each year).

2 hrs. 2d term.

A rapid reading with the use of Schrader's transliterated texts of the whole range of Babylonian and Assyrian historical inscriptions, the object being to gain a familiarity with the literature and the history, and a critical estimate of them.

[Monday and Tuesday, 8.15 A.M.]

- 17 *Ethiopic and Syriac*. 2 hrs. 1st term.

A rapid survey of the elements and the distinctive structure of these languages, largely in order to prepare the student for a study of Comparative Grammar. The work will include the reading of Bachmann's critical edition of *Obadiah* in Ethiopic, and of some easy Syriac text.

[Friday, 8.15 to 10.15 A. M.]

- 18 *Comparative Semitic Grammar*. 2 hrs. 2d term.

The reading and discussion of Wright's *Comparative Grammar*, special themes being presented in lectures and class papers.

[Friday, 8.15 to 10.15 A. M.]

- *19 *Biblical Literature* (two years' course in the English Bible). 2 hrs. both terms.

A survey of the whole Bible in English from an historical and literary standpoint, the material being arranged, as far as possible, chronologically. It aims to promote, (1) a classified and

organized grasp of the Biblical material, (2) a realization of the historical position and significance of the Hebrew people as a Western Asiatic and Semitic race, (3) an appreciation of the Bible as literature and as a literary whole, (4) an intelligent attitude toward the various problems raised by Biblical criticism.

This course covers two years, dividing at the Captivity. For 1895-96 the history and literature of the Old Testament down to the Captivity will be the subject of study.

20 *English Bible Seminary* (each year). 2 hrs. both terms.

An investigation-course, intended to train men for patient and accurate investigation of Biblical questions. It will not aim to cover the whole Biblical field, but will consider a variety of topics.

This course will be very informal, the class meeting at intervals to report and compare results of individual study of themes assigned by the instructor.

Dr. CREELMAN :—

*21 *Beginning Arabic* (each year). 2 hrs. both terms.

During the first term the principles of the language are mastered in connection with the careful reading of *Genesis* i-iii. During the second term until Easter the class reads rapidly in easy prose Arabic; after Easter selected Suras of the Qurân are read, and in connection with them, lectures are given on early Arabian civilization, Arabic literature, and the structure and contents of the Qurân.

[Thursday and Friday, 5 P. M.]

*22 *Beginning Assyrian* (each year). 2 hrs. both terms.

The year's work includes the mastery of the more common cuneiform signs, the principles of the language, the rapid reading of much transliterated material, the careful reading of selected portions of the texts of Tiglathpileser, Shalmaneser, and Sennacherib in the cuneiform, together with lectures on the outlines of Assyro-Babylonian history and literature.

[Monday and Thursday, 4 P. M.]

23 *The Book of Jeremiah* (Hebrew). 2 hrs. 1st term.

Interpreted with especial reference to the historical setting and chronological sequence of the material and as illustrating the principles of prophecy.

[Wednesday, 5 P. M., and Friday, 4 P. M.]

- 24 *The Book of Ezekiel* (Hebrew). 2 hrs. 1st term.
[Omitted in 1895-96.]
- 25 *Biblical Aramaic* (each year). 2 hrs. 2d term.
A study of the elements of Aramaic, together with a critical study of the books of Ezra and of Daniel and an interpretation of the literary form and contents of the book of Daniel.
[Wednesday, 5 P. M., and Friday, 4 P. M.]
- *26 *Old Testament Wisdom* (English). 1 hr. both terms.
The books of Job, Proverbs, Ecclesiastes, and the Song of Songs, so arranged as to indicate the historical developments of Wisdom ideas.
[Thursday, 12.30 P. M.]
- *27 *Messianic Prophecy*. 1 hr. both terms.
A survey of the Messianic material in the Old Testament such as to show the historical development of the conception. A series of studies, supplemented by lectures.
[Omitted in 1895-6.]
- Mr. FOWLER :—
- *28 *Sight-Reading in Hebrew*. 2 hrs. both terms.
A rapid reading of the Hexateuch, each document being read separately.
[Wednesday, 3 to 5 P. M.]
- *29 *The Minor Prophets* (English). 1 hr. both terms.
A close study of the Minor Prophets from an historical and literary point of view, with especial attention to the mastery of the thought and purpose of each writing, and in connection with a survey of the general subject of Prophecy.
[Wednesday, 12.30 P. M.]
- *30 *The Book of Isaiah* (English). 1 hr. both terms.
[To be given in 1896-7.]

The Semitic Club, formed of the instructors and students in the departments of Semitic Languages and of Biblical Literature and in the Divinity School, holds regular bi-weekly meetings throughout the year, for the reading and discussion of original papers, reviews of recent literature, and reports of progress. Smaller organizations afford an opportunity for the critical reading in company of selections from Hebrew and Arabic literature.

IV. CLASSICAL PHILOLOGY

Professors PECK and SEYMOUR :—

- 1 *Classical Seminary.* 2 hrs. both terms.

With specially qualified students, careful study is given to one Greek and two Latin authors, with exercises in the critical treatment and interpretation of classical texts. The Greek and the Latin exercises are held on alternate weeks. In 1895-96 the poems of Pindar, the *Annals* of Tacitus, the *Epistles* of Horace, and the *Letters* of Pliny will be taken up for study.

Professor HOPKINS :—

- 2 *Introduction to Comparative Syntax.* 2 hrs. both terms.
[Monday and Wednesday, 3 to 4 P. M.]

Dr. OERTEL :—

- 3 *Linguistics.* 2 hrs. both terms.

A discussion and exposition of the general principles and chief problems of linguistic science; such topics as sound-change, change of significance, the fundamental facts of syntax, the relation of grammar to logic, the relation of linguistics to ethnography, the theories of the origin of speech, etc., will be examined. Paul's *Principles of the History of Language*, translated by Strong (Macmillan), will be used as a text book for part of the course and critically read. If time permits, some of the more important questions regarding the Indo-European branch will be discussed. The course will be conducted largely by lectures, but it will require outside reading and occasionally the preparation of short papers on assigned topics. No knowledge of Sanskrit is required for this course.

[Tuesday, 4 to 6 P. M.]

- 4 *Greek Dialects.* 3 hrs. both terms.

The Greek dialect inscriptions will be read and interpreted, chiefly from the grammatical side, together with the fragments of the lyric poets, with special reference to the help that may be derived from the inscriptions for the textual criticism of the latter. The text-books will be Cauer's *Delectus Inscriptionum Græcarum*, 2d. ed., and Bergk's *Anthologia Lyrica* (Teubner).

- 5 *Phonetics* 1 hr. both terms.

An introduction to general Phonetics on the basis of Sievers' *Grundzüge der Phonetik*, 4th ed., Leipzig, 1893, and their

application to the English, German, and Latin sound-systems. Sweet's *Primer of Phonetics*, Oxford, 1890; Laura Soames' *Introduction to Phonetics*, London, (Swan, Sonnenschein & Co.); Victor's *Elemente der Phonetik und Orthoepie des Deutschen, Englischen u. Französischen*, 2d ed., Heilbronn, 1887; O. Bremer's *Deutsche Phonetik*, Leipzig, 1893; and Seelmann's *Die Aussprache des Latein*, Heilbronn, 1885, will be chiefly used.

PROFESSOR PERRIN :—

6 *The Tradition of the History of Alexander.*

3 hrs. both terms.

Lectures and seminary exercises.

A critical study of the sources for the history of Alexander, from the *Letters* of Alexander himself, and the *Journals*, through the *Anabasis* of Arrian and the *Alexander* of Plutarch. The treatment of their authorities in the histories of Alexander by Thirlwall, Grote, Droysen, and Holm will be compared. The text-books required will be: Niese, *Geschichte der griechischen und makedonischen Staaten*, I Theil, Gotha, 1893; Schaefer, *Quellenkunde der griechischen und römischen Geschichte*, Leipsic, Teubner, 1889 and 1885; Teubner texts of Arrian's *Anabasis*, Plutarch's *Alexander*, the *Bibliotheca Historica* of Diodorus (vol. iii, ed. Dindorf), Justin's *Epitome*, and Curtius Rufus' *Historiae Alexandri Magni*.

A reading acquaintance with German is indispensable for the successful prosecution of this course.

[To be given in 1896-97.]

7 *Pausanias.*

1 hr. both terms.

Lectures.

A practical introduction to Pausanias, and a critical reading of his description of Olympia and Delphi, with illustrations from the excavations of 1876-81 and 1894-95.

*8 *Aristophanes. The Testimony of the Old Athenian Comedy to the Political and Social Life of its Time.*

3 hrs. both terms.

The *Archarnians*, *Knights*, *Wasps* and *Birds*, will be read entire, together with extracts from the other plays, and a few of the more notable Fragments.

[Monday, Wednesday, and Friday, 12.30 P. M.]

Professor SEYMOUR :—

- 9 *Aeschylus.* 3 hrs. both terms.
The extant plays of Aeschylus will be read. The instructor will interpret the *Prometheus* and parts of other plays. The members of the class will interpret in turn.
[Monday and Wednesday, 8.30 to 10 A. M.]
- 10 *Plato.* 2 hrs. both terms.
The *Republic* and the portions of the other dialogues which are most important for its elucidation.
[Wednesday, 4 to 6 P. M.]
- 11 *The Greek Orators.* 3 hrs. both terms.
A study of Greek Oratory, beginning with the orations of Isaeus, and including some of the private orations of Demosthenes, with reference to Athenian life and law, as well as to the development of Attic eloquence.
[Omitted in 1895-96.]
- 12 *Homer.* 2 hrs. both terms.
Introduction to the critical study of Homer. Lectures on the history of Homeric study, Epic poetry, the composition and transmission of the poems, life in the Homeric times in its various aspects; Homeric language and verse. Followed by a familiar but critical interpretation (and exercises in interpretation and criticism) of portions of the *Iliad* and the *Odyssey*.
[Omitted in 1895-96.]
- *13 *Pindar.* 2 hrs. 2d term.
[Monday and Friday, 3 P. M.]
- *14 *Plato.* 2 hrs. both terms.
The *Gorgias* and several of the minor dialogues.
[Tuesday and Thursday, 3 P. M.]
- *15 *The Phaedo of Plato.* 2 hrs. 1st term.
Introduction to the literary and philosophical study of Plato; observing carefully the dramatic character of the work, the connection of thought, and the marks of division of the argument, with special attention to the characteristics of Plato's literary style.
[Omitted in 1895-96.]

- *16 *Aristotle's Nicomachean Ethics.* 2 hrs. 2d. term.
Books i-iv and x, with a study of Aristotle's methods of research and statement.
[Omitted in 1895-96.]

- *17 *Homer, Theocritus, and the Lyric Fragments.* 2 hrs. both terms.
The works of these poets will be read rather rapidly, with more attention to their characteristics as literature than to specially linguistic and grammatical questions.
[Omitted in 1895-96.]

Professor GOODELL :—

- 18 *The Teaching of Greek.*
Sometime in the second term several lectures are given, to graduate students and any others who may be interested, on elementary Greek teaching. The times and place will be announced on the University Bulletin.

- 19 *The Athenian Commonwealth.* 1 hr. both terms.
The Athenian state in its historical development and in its completed form as existing in the fourth century B. C. Aristotle's *Athenian Constitution* will be read and interpreted, topics will be assigned for individual investigation, and the results presented to the class for criticism and discussion. The student will thus become familiar with our principal ancient authority in this field and obtain a practical introduction to the voluminous modern literature of the subject.

- *20a *Introduction to Greek Archaeology.* 1 hr. both terms.
An outline study of Greek pottery, architecture, and sculpture, with some attention to gems, metal-work, coins, figurines, and painting, as illustrated by existing examples. The subject is taken up by periods, to show the historical development of Greek artistic production and its relation to other phases of Greek life and to modern art. Photographs, the large collection of archaeological works belonging to the Library, the University coin-collection, and the casts of the Art School, are freely used in lectures and are made available for private study.

- *20b *Introduction to Greek Archaeology.* 2 hrs. both terms.
The same as 20a with the addition of another hour, to be devoted to individual work on special topics. A good reading knowledge of French or German is essential.

- 21 *Sophocles.* 2 hrs. both terms.

Reading of the seven extant plays with special attention to the artistic form, including the poet's literary style, treatment of the myths, management of the action, use of metres, and the like. A brief introduction to Greek rhythmic and metric is given by lectures.

[Omitted in 1895-96.]

Professor REYNOLDS :—

- 22 *Aristotle's Poetics. Literary Criticism in Ancient Times.*

1 hr. both terms.

Interpretation of the *Poetics* and parts of the *Rhetoric*, with selections from Plutarch, Pseudo-Longinus, and Lucian.

[Omitted in 1895-96.]

- 23 *Late Greek Poetry.* 1 hr. both terms.

This course will include a survey of Alexandrian and later Greek poetry. Reading of the mimes of Herondas, with selections from the Anthology, and from the hymns of Callimachus, and other fugitive poetry.

[Omitted in 1896-97.]

- *24 *Lucian: Greek Culture under Marcus Aurelius.*

2 hrs. both terms.

A general reading course in prose with discussion of the life and times of Lucian, and of his influence upon modern literature. The *Dream*, *Charon*, *Timon*, and *Angler* will be read with many minor pieces including the *Dialogues of the Gods* and *Dialogues of the Dead*. The Teubner text will be used together with Williams's *Selections from Lucian*.

[Tuesday and Friday, 12.30 P. M.]

- *25 *Euripides.* 2 hrs. both terms.

A general reading-course with reference to Euripides's poetic and dramatic quality. Five or six plays will be read. Discussion of the poet's relation to his own times, style, metres, dramatic innovations, and influence on the Roman and the modern drama, with occasional lectures.

[Omitted in 1895-96.]

Mr. KITCHEL :—

- *26 *The Sicilian Invasion.* 2 hrs. both terms.

The Sixth and Seventh Books of Thucydides will be read. The relation of this great catastrophe to the preceding and the

subsequent history of the Athenian empire will be emphasized ; the geography and topography involved will be carefully considered, and the author will be compared with the historians who preceded and followed him.

[Wednesday and Saturday, 9.30 A. M.]

Dr. FAIRBANKS :—

- 27 *Inscriptions relating to Greek Religion.* 1 hr. both terms.

Dittenberger's *Sylloge Inscriptionum Graecarum*. Part II, ii, *res sacrae* ; selections from Part I.

[Tuesday, 4 P. M.]

- 28 *Greek Worship and Belief.* 1 hr. both terms.

Readings from Pausanias. Lectures and seminary exercises (a) on forms of Greek worship and (b) on the types of Greek gods in worship, in literature, and in art.

[Omitted in 1895-1896.]

- 29 *Hellenistic Greek.* 1 hr. both terms.

Readings from the Septuagint ; characteristics of Hellenistic Greek ; relation of the Septuagint to the Hebrew text of the Old Testament.

[Wednesday, 3 P. M.]

Mr. BROWNSON :—

- *30 *The Greek Theater.* 1 hr. both terms.

Dealing with the plan and structure of the theater, with special reference to the stage question, and with scenic antiquities in general. The subject will be studied from both the archaeological and the literary points of view. The results of recent excavations will be discussed in lectures, and illustrative extracts will be read from tragedy and comedy.

[Wednesday, 5 P. M.]

- *31 *Greek Composition and Sight Reading.* 2 hrs. both terms.

Alternate exercises in prose composition and the reading at sight of selections from Xenophon. The course is designed especially for those who intend to teach.

[Monday and Friday, 2 P. M.]

- 32 *Greek History.* 1 hr. both terms.

From the Roman Conquest to the present time. In part a historical course, but dealing especially with the question of language changes during this period.

[Omitted in 1895-96.]

Professor PECK :—

- 33 *Lucretius*. 2 hrs. first term.
[Saturday, 9.30 to 11.30 A. M.]
- 34 *Early Latin*. 1 hr. first term.
Study of inscriptions and of the ante-classical literature, based on Allen's *Remnants of Early Latin*.
The course is largely philological and critical, dealing with the origins of forms, constructions, and literature, and is specially commended to those who expect to teach Latin.
[Omitted in 1895-96.]
- 35 *Latin Philology*. 1 hr. both terms.
In this course such features of the language are studied as its historical development and decay, relations to other languages, forms and syntax, pronunciation, adaptation to literature, etc.
[Wednesday, 9.30 A. M.]
- *36 *Hexameter Poetry*. 3 hrs. first term.
Development of poetic forms and styles in Latin, with studies in Ennius (the *Annals*), and Lucretius.
[Omitted in 1895-96.]
- *37 *Prose Latin of the 1st Century*. 3 hrs. both terms.
Tacitus (the *Annals*), Suetonius, and Velleius Paterculus.
[Monday, Wednesday and Thursday, 10.30 A. M.]
- *38 *Quintilian* (X. and XII.) 2 hrs. first term.
[Omitted in 1895-96.]
- *39 *Roman Private Antiquities*. 2 hrs. both terms.
Pliny's Letters and Martial.
[Tuesday and Friday, 10.30 A. M.]

Professors H. P. WRIGHT and MORRIS :—

- *40 *Satire and Comedy*. 2 hrs. both terms.
Juvenal and Martial. Plautus: three or four plays. With special attention to literary history, form, and influence.
[Omitted in 1894-95.]
- *41 *Lyric and Elegiac Poetry*. 2 hrs. both terms.
Horace, (*Odes* iii and iv), Catullus, Tibullus, and Propertius. With special reference to literary qualities.
[Monday and Thursday, 9.30 A. M.]

Professor MORRIS :—

42 *Historical Syntax.* 1 hr. both terms.

Principles and methods of the historical syntax of the Latin modes and tenses; discussion of text-books and of typical special investigations; study of the history of *quam*.

43 *Plautus.* 1 hr. both terms.

A course of lectures giving a general introduction to the study of Plautus, followed by work upon idioms and phraseology.

*44 *Cicero's Letters.* 2 hrs. both terms.

Reading of the letters in Watson's *Selections* (text-edition), followed by study of the speeches and letters of the year 708/46, with a view to arranging them in chronological order.

During the latter half of the year each session will occupy two hours and little outside work will be required.

[Omitted in 1895-96.]

*45 *The Conspiracy of Catiline.* 1 hr. both terms.

A study of the conspiracy of Catiline from the sources, involving the reading of Cicero *in Catilinam i-iv* and *pro Murena*, Sallust's *Catilina*, Asconius on the oration *in Toga Candida*, and some chapters of Dio Cassius, Plutarch and Appian.

Each session will occupy two hours and little outside work will be required.

[Monday, 4 to 6 P. M.]

Assistant Professor LANG :—

46 *Low Latin.* 1 hr. both terms.

The aim of this course is to give an historical account of the popular speech of Rome and of the Roman provinces, and an outline of its grammar and syntax, as it is disclosed to us by classical Latin, the testimony of the Latin grammarians, documents of early mediaeval Latin and the consensus of the Romance languages. It is intended to make this a two-years' course, the second year being chiefly devoted to original investigation of special subjects assigned by the instructor. The following text will be read: J. F. Gamurrini, *S. Silviae Aquitanae Peregrinatio ad Loca Sancta*. Editio altera. Romae 1888.

[Thursday, 5.00 P. M.]

Mr. ROBERTS :—

*47a *Terence. The Phormio, Adelphoi, and Heautontimoroumenos.* 2 hrs. first term.

*47b *Vergil. Aeneid, books VII–XII.* 2 hrs. second term.
[Tuesday and Thursday, 4 P. M.]

Dr. ROBINSON :—

48 *Roman Law.* 2 hrs. both terms.

The *Institutes* of Justinian will form the basis of the work, with supplementary titles from the Digest, and comparisons with the *Institutes* of Gaius.

The elementary principles of Roman Law and the technical expressions of the text will be explained.

The study of the *Institutes* will be prefaced by lectures upon the growth of Roman legislation in its various stages from the earliest times to the time of Justinian.

The student will be expected to do considerable collateral reading in various institutional writings on the doctrines of Roman law and report upon his investigation of special problems connected with the subject.

[Monday and Thursday, 12.30 P. M.]

Dr. THOMPSON :—

*49a *Ovid, Fasti.* 2 hrs. first term.
Studies in Roman topography.

*49b *Livy.* 2 hrs. second term.

Passages in the fourth decade on the life and times of Cato the Censor, with special reference to Cato's place in Roman literature.

[Monday and Thursday, 12.30 P. M.]

For a Course in Greek Philosophy, see course I, 25.

Professor Hoppin's Lectures on the History of Art are open to classical students. See Course VIII, 3.

Mr. Albert S. Wheeler's course on Roman Law in the Law School is open to classical students under certain limitations.

The Classical Club now has a large and convenient room (the western half of the College Library of half a century ago) set apart for its use. This room is intended to become the headquarters of advanced students in classical philology, and to furnish to them the advantages of a good private library. It already contains over a thousand volumes, of texts, commentaries, works on antiquities, etc., as the germ of a departmental library. The books most needed for the immediate work in the classical courses for the present year are to be found there. The Club meets every Saturday and spends that evening in reading and discussing the work of some classic author, with reports and papers in the field of Greek and Latin Philology. During the year 1895-96 the dialogues of Plato and the plays of Plautus will be studied.

Graduate students of this University, with the approval of the classical instructors, are admitted to the free enjoyment of the privileges of the American School of Classical Studies at Athens.

V. MODERN LANGUAGES AND LITERATURES

Professor LUQUIENS :—

*1. *French Literature of the XIXth Century.*

1 hr. both terms.

A presentation in the form of lectures of the successive schools and tendencies which have obtained in French literature within this century. Reading outside of the class and papers on topics connected with the subject will be required. A good reading knowledge of the language is needed.

Students who take this course are advised to take also Course 12 with Mr. Taylor.

[Wednesday, 10.30 A. M.]

2 *French Literature of the XVIIth Century.* 3 hrs. both terms.

[Omitted in 1895-96.]

*3 *Early French Literature and Historical Grammar.*

2 hrs. both terms.

The first term will be devoted to a study of the linguistic facts connected with the origin and formation of French from Latin and to the interpretation of the oldest texts ; the rest of the year to the reading, in full or in extracts, of the best literary productions of the xith, xiith and xiiith centuries.

[Monday and Thursday, 10.30 A. M.]

4 *French Literature of the XVIIIth Century.*

2 hrs. both terms.

Principally a study of the works and theories of Montesquieu, Voltaire, and J. J. Rousseau, although minor writers will also be read and discussed. A great deal of reading is done in and out of the class and an active participation required from the students in the form of papers on assigned topics.

[Tuesday and Friday, 8.30 A. M.]

5 *French Critics and Criticism in the XIXth Century.* 1 hr.

The study will begin with Sainte Beuve and include every critic of mark down to our days. The time will be divided between lectures by the instructor and reports of the students on the work assigned to them. A general knowledge of French literature required.

Assistant Professor LANG :—

6 *Provençal Language and Literature.* 2 hrs. both terms.

This course is strictly literary and philological, and is open only to those who have made a scientific study of the language

and literature of France and Italy. The course begins with lectures on the historical grammar of old Provençal, after which the origin and growth of Provençal lyric poetry, and Provençal metre, will be studied in connection with the reading of selections from the works of the Troubadours. The text-book used will be Crescini's *Crestomazia provenzale*, Padova, 1892.

[Tuesday, 4.00 to 6.00 P. M.]

*7 *Spanish, Elementary Course.* 3 hrs. both terms.

The aim of this course is to make the student acquire a good pronunciation and to give him such practice in conversation and composition as shall make it possible to dispense more and more with the use of English in the succeeding courses.

Knapp's *Spanish Grammar* and *Spanish Readings* will be used as introductory text-books.

[Monday, Wednesday, and Thursday, 9.30 A. M.]

*8 *Spanish Literature of XVIth and XVIIth Centuries.*

1 hr. both terms.

This is a literary course open only to such students as shall have passed through the preceding course or who shall satisfy the instructor of their fitness by passing a special examination.

a. Spanish Drama. Guillen de Castro's play *Las Mocedades del Cid* (edited by E. Mérimée, Toulouse, 1890) and *Select Plays of Calderon* (edited by Norman Maccoll, London, 1888) will be read, and lectures given on the origin and development of dramatic art in Spain.

[Omitted in 1895-96, but given in 1896-97.]

b. Spanish Fiction. Study of the Novel in the golden age of Spanish literature, based on the reading of selections from works of the sixteenth century, but especially on Cervantes's *Don Quixote* (edition of Garnier Hermanos, Paris, 1875).

[Tuesday, 9.30 A. M.]

*9 *Italian, Elementary Course.* 3 hrs. both terms.

The aim of this course is to give the student a correct pronunciation of Italian, and such a command of grammar and vocabulary as shall lead to a gradual substitution of Italian for English as a means of instruction.

Grandgent's *Italian Grammar* and *Italian Composition*, and Baragiola's *Crestomazia Italiana Ortofonica* will be the text-books used.

[Tuesday, Wednesday, and Friday, 10.30 A. M.]

- *10 *Modern Italian Essayists.* 1 hr. both terms.

Besides affording practice in reading the more difficult prose of the Italian essay, this course is specially intended to make the student acquainted with some of the leading aspects of Italian life and thought in the times of Dante, to the study of whom it is considered as preparatory.

La Vita italiana nel trecento, I Storia, Milano, Fratelli Treves, Editori, 1892, will be read.

[Monday, 10.30 A. M.]

- *11 *Dante's Life and Works.* 1 hr. both terms.

a. The *Vita Nuova*, the *Convito*, and the *Inferno*.

[Omitted in 1895-96.]

The editions of Fraticelli are recommended.

b. The *Purgatorio* and *Paradiso*.

[Friday, 9.30 A. M.]

Mr. TAYLOR :—

- *12 *Systematic Readings in the French Literature of the XIXth Century.* 2 hrs. both terms.

These readings of representative authors will be so connected and accompanied by such comments as to give a clear view of the literary evolution which has taken place in France within this century.

[Monday and Thursday, 9.30 A. M.]

Assistant Professor CAMERON :—

- 13 *Molière : His Life and Works.* 1 hr. both terms.

(a) Theories of Molière's life, (b) Dramatic indebtedness, (c) Dramatic development, (d) Critical study, (e) Purpose of his social satire, (f) Imitators. Collateral reading.

[Monday, 10 A. M.]

Professor PALMER :—

- 14 *Gothic, Old High German, and Old Saxon.*

2 hrs. both terms.

An introductory course, especially for those who intend to study historically German or English.

The first half-year will be given to the study of Gothic and its phonological relations to both earlier Indo-Germanic and later Germanic languages. Braune's *Gotische Grammatik* or Wright's *Gothic Language Primer*, Heyne's *Ulfilas*, and Henry's *Comparative Grammar of English and German*.

The second half-year will be given to the study of Old High German and Old Saxon. Braune's *Althochdeutsche Grammatik* and *Althochdeutsches Lesebuch*; Gallée's *Altsächsische Grammatik*; Behaghel's *Hlland*.

[Omitted in 1895-96.]

- 15 *Old Norse (Icelandic).* 2 hrs. both terms.
Grammar, and reading in the Sagas and the Elder Edda.
[Omitted in 1896-97.]

- *16 *Scientific German.* 2 hrs. both terms.
Rapid reading of extracts and monographs treating of subjects in natural science.
[Wednesday and Saturday, 9.30 A. M.]

- *17 *Goethe, Works and Life.* 3 hrs. both terms.
After an outline study of Goethe's life and development in connection with his lyric poems, his early prose writings, and his principal dramas, particular attention is given to *Faust* I. and II., the later prose works, and Goethe's important utterances in letters, journals, and conversations.
[Monday, Wednesday, and Thursday, 10.30 A. M.]

- *18 *History of German Literature, 1648-1832.* 2 hrs. both terms.
The development of German literature is studied from the close of the Thirty Years' War to Goethe's death.
[Tuesday and Friday, 11.30 A. M.]

Assistant Professor GRUENER :—

- 19 *Middle High German :—* 2 hrs. both terms.
Hartmann. *Nibelungenlied*. Selected poems of Walther von der Vogelweide. Lectures and papers.

- *20 *Schiller, Works and Life.* 2 hrs. both terms.
Rapid reading of poems, plays, and prose writings of Schiller with study of his life.
[Monday and Thursday, 10.30 A. M.]

Mr. W. A. ADAMS :—

- *21 *Prose of Modern Historians and Critics.* 2 hrs. both terms.
Rapid reading of selections from historical and political writings, and from literary criticism.
[Monday and Thursday, 10.30 A. M.]

Dr. CORWIN :—

- 22 *Lessing.* 1 hr. both terms.

This course has as its special object the study of Lessing's reformatory influence on German thought and literature. The state of German thought and literature immediately preceding Lessing will be surveyed—particular investigation being made of the French influences of the period. After an outline study of Lessing's life and development, his critical and philosophical writings, particularly those which involve the principles of dramatic art, will be read and his dramas critically investigated.

[Tuesday, 10.30 A. M.]

Professor LOUNSBURY :—

- 23 *The English Literature of the XIVth Century.*

Professor BEERS :—

- 24 *English Literature.* 2 hrs. both terms.

The history of English Romanticism from Thomson to Swinburne (1726-1890), with incidental study of the parallel movements in Germany and France. The instruction is given mainly by lectures.

This is an undergraduate course, but additional reading is required of graduate students, and special topics assigned them for thesis work.

[Thursday, 3 P. M., and Friday, 5 P. M.]

- 25 *The Restoration and the Classical Age (1660-1745).*

The course is intended only for graduate students, who meet for instruction once a week to discuss and report upon assigned portions of the writings of Dryden, Etherege, Wycherly, Vanbrugh, Farquhar, Congreve, Buckingham, Milton, Bunyan, Butler, Otway, Cowley, Swift, Prior, Addison, Pope, Steele, Parnell, Gay, DeFoe, etc. Diaries, memoirs, and histories of the period are also in part examined.

Professor COOK :—

The strictly graduate courses offered below are given according to circumstances and the needs of the graduate students actually in attendance; but special attention is given to the supervision of individual research along these and similar lines.

- 26 *Theories of Poetry.* 2 hrs. 2d term.
 A course in the theories of poetry in general, and in the principles of criticism applicable to its various departments, as the epic, dramatic, and lyric. Discussions and papers on the basis of standard works, such as Aristotle's *Poetics*, Sidney's *Defense of Poesy*, Addison's *Criticisms on Paradise Lost*, Boileau's *Art of Poetry*, Lessing's *Laokoon*, and others of similar character.
- 27 *Old English Poetry.* 1 hr. 1st term.
 The texts used are *Judith* (Cook's edition), *Elene* (Kent's edition), and *The Battle of Maldon* (Sweet's *Reader*). These are read, their place in the literature examined, and questions of authorship, date, and textual criticism discussed. Ten Brink's and Wülcker's *Histories of Old English Literature* are constantly used for reference.
 [Wednesday, 3.30 P. M.]
- 28 *Old English Grammar.* 1 hr. 2d term.
 An exhaustive grammatical examination of some prose text is made, on the basis of Cook's *Phonological Investigation of Old English* and edition of Sievers' *Grammar* for Phonology, of the latter for Inflection, and of March's *Grammar* for Syntax.
- 29 *Historical English Prosody.* 1 hr. 1st term.
 Schipper's *Englische Metrik* is adopted as the basis of study but reference is made to the discrepant views of other authorities.
- 30 *Middle English Grammar.* 1 hr. 2d term.
 An outline of Middle English Phonology and Inflection is given by means of lectures, and the knowledge thus gained is applied in a grammatical study of Chaucer, on the basis of Ten Brink's *Chaucer's Sprache und Verskunst*.
- 31 *Middle English Texts.* 1 hr. both terms.
 A course in the interpretation of selected Middle English texts.
- 32 *Seminary in Ben Jonson.*
 A study of the language, versification, sources, dramatic art, and influence of Ben Jonson.

- *33 *History of English Literature.* 2 hrs. both terms

An outline of the subject, on the basis of Brooke's *Primer* Taine, Morley's *First Sketch*, and Ten Brink's *Early English Literature*, with considerable reading of English authors at first hand. Frequent preparation of brief papers on assigned topics.

[Wednesday, 11.30, and Saturday, 8.30 A. M.]

- *34 *Old and Middle English.* 2 hrs. both terms.

An elementary course in the beginnings and earlier development of the English language and literature. The first term is devoted to Cook's *First Book in Old English*. In the second term this is followed by more difficult Old English texts, and by the reading of selections from Chaucer and other Middle English writers for linguistic purposes.

[Monday and Thursday, 10.30 A. M.]

- *35 *Chaucer and his Century.* 2 hrs. both terms.

Literary study of nearly the whole of Chaucer's works, with such examination of his chief contemporaries and predecessors as the time allows.

[Monday and Thursday, 12.30 P. M.]

Dr. CROSS :—

- 36 *The English Novel from DeFoe to Scott.* 1 hr. both terms.

A course in literary history. It consists of a series of lectures on the sources, the art, and the Continental influence of the English novel of the eighteenth century. Those who elect this course should have a reading knowledge of French and German.

Mr. LEWIS :—

- *37 *English Poets.* 2 hrs. both terms.

First Term : The poets of the Lake School,—their personal history, works, and critics. Special attention will be given to Wordsworth.

Second Term : Byron, Shelley, Keats,—their personal history, works, and critics.

[Wednesday and Friday, 12.30 P. M.]

Dr. PHELPS :—

- 39 *The Elizabethan Drama.* 2 hrs. both terms.

A purely literary course in the English drama, from the Mystery plays to the closing of the theatres in 1642. Specimen Mysteries, Moralities, Interludes, and early plays will be examined, and the writings of the following Elizabethan dramatists will be read: Greene, Peele, Lyly, Kyd, Marlowe, Jonson, Dekker, Chapman, Heywood, Middleton, Beaumont and Fletcher, Webster, Ford, Massinger, Shirley, Brome. Private reading will be assigned in histories, etc.

[Wednesday and Saturday, 10.30].

- 40 *The Restoration Drama.* 1 h. both terms.

A study of the English drama from 1660 to 1700, together with the social life of the times. Dryden, Wycherley, Congreve, Vanburgh, Farquhar, will be among the dramatists studied. Special papers will frequently be required from the students.

[Omitted in 1895-96.]

Mr. H. A. SMITH :—

- *41 *Studies in Comparative Criticism.* 2 hrs. both terms.

The method of this course will be mainly that of a comparison of the standards of criticism of the eighteenth century, as shown in Addison, Pope, and Johnson, with those of Coleridge, Leigh Hunt, Matthew Arnold, and other critics. Its object will be to train the student in the analysis of poetic styles, to develop the aesthetic judgment, and to encourage a discriminating appreciation of literature.

[Wednesday and Saturday, 10.30 A. M.]

- *42 *Life and Manners in the Age of Pope.* 2 hrs. both terms.

Life of the times as reflected in anecdotic, periodical, and epistolary literature during the first half of the eighteenth century; authors and public opinion. Much outside reading along special lines will be expected.

[Monday and Wednesday, 5 P. M.]

VI. NATURAL AND PHYSICAL SCIENCE

Professors BRUSH, PENFIELD, and PIRSSON :—

1 *Mineralogy.*

Laboratory work and blowpipe analysis and the simple chemical methods for testing minerals. Laboratory work in determinative mineralogy. Lectures in descriptive mineralogy, on Thursday, at 2.30 P. M. Lectures in crystallography, supplemented by practical work in the measurement and calculation of crystals, and the determination of their optical and physical properties.

Opportunities are offered to those who are qualified to pursue original investigations in mineralogy and crystallography.

2 *Lithology (including Microscopical Petrography).*

History, origin, and classification of igneous rocks. Metasomatic and dynamic changes, including effects of dynamometamorphism. Laboratory methods of determination and study, chemical and microscopical. Field excursions are offered from time to time. The work is carried on mostly in the laboratory, with access to collections, and the course is open only to those whose previous training in mineralogy and geology has been sufficient to enable them to pursue the subject advantageously.

*3 *Elementary Structural and Dynamical Geology.* 3 hrs.
[Monday, Wednesday, and Friday, 8 A. M.]

Professor WILLIAMS :—

4 *Historical Geology and Palaeontology.*

The study of fossils in the laboratory, and with field work so far as practicable, (1) as means of determining and classifying geological formations, (2) as evidence of the relations of organisms to their environment and of their evolution in the past.

For this course previous study in Zoology is necessary as preparation ; and for those who wish to take the course, and are not sufficiently well prepared in this direction, preliminary work in the zoology of living forms will be planned.

Instruction will be given also by informal lectures and the assignment of courses of reading of geological literature bearing upon the problems under investigation.

The number of hours and the specific line of study will be arranged by the instructor upon consultation in each case.

5 *Philosophy of Life and Organism.* 1 hr. both terms.

A discussion of the facts and phenomena underlying the modern theories of Evolution; and of the various forms of theory proposed to explain them.

[Wednesday, 8.30 A. M.]

*6 *Geology (general course).* 2 hrs. both terms.

A course of lectures on the general principles of the science of geology. Historical geology will be studied chiefly from a geological standpoint; the special study of the relation of organisms to geology will be considered in the following course. Dana's *Manual of Geology*, 4th edition, will be used as the text-book.

[Tuesday and Friday, 9.30 A. M.]

*7 *The Geological History of Organisms.* 3 hrs. both terms.

In this course Historical Geology will be studied from a biological point of view. The nature of organisms, the principles of classification in Natural History, and theories regarding the evolution of organisms are discussed by means of occasional lectures. Instruction will be given chiefly by means of laboratory exercises, the use of the historical part of Dana's *Manual* and other literature, and the preparation of theses. Open only to those who have already taken course 6.

[Monday, Wednesday, and Thursday, 9.30 A. M.]

Professor BREWER :—

*8 *Physical Geography.* 3 hrs. first half year.

This course of lectures includes the elements of dynamical geology and of natural history, so far as is necessary for an understanding of the physical geography of the globe and the distribution of species.

[Tuesday, Wednesday, and Thursday, 5 P. M.]

[For a course in Physical Geography in its relation to history, see Political and Social Science, course 24.]

Assistant Professor BEECHER :—

9 *Invertebrate Palaeontology.* Daily, 11 A. M., both terms.

(a). The study of extinct faunas by means of collections of fossils from typical localities.

(b). Systematic study of the structure, development, and affinities of one or more classes of fossil animals.

In the laboratory work, attention is given to modern methods of preparation and preservation of specimens. Open to those who have some previous knowledge of geology and zoology.

(c). Original investigation. Following *a* and *b*, an opportunity is given to take up some special subject for investigation and the discovery of facts new to science. The requisite material is available in the collections in the Peabody Museum. The work necessitates the frequent consultation of memoirs and scientific reports, occasional field work, the use of the microscope, the preparation of thin sections, and other methods employed in practical investigation.

[Courses *a* and *b*: Laboratory work, three days per week, 2-5 P. M. Course *c*: Laboratory work, three days per week, 2-4 P. M.]

Professor A. W. WRIGHT :—

*10 *Physics.*

2 hrs. both terms.

First-year course. Two exercises each week, chiefly practical work in the Sloane Physical Laboratory, with measurements, especially in heat, light, and electricity, each exercise occupying two hours. As introductory to the laboratory practice, the exercises during a portion of the first term consist of recitations or discussions upon the theory and methods of physical measurements, the use of instruments, and other special topics. Laboratory facilities are also freely accorded to students of the course at other times than those of the stated exercises.

[Monday, Tuesday, Wednesday, and Thursday, 10 A. M. to 12 M.]

11 *Physics (Advanced course).*

Practical work in the Sloane Physical Laboratory, with instruction in the principles and methods of physical investigation, the processes and instruments of measurement, and the methods of computing and reducing results of observations. Special attention is paid to practical measurements in optics, electricity, and magnetism. The student is expected to make original investigations an important part of his work, and has the free use of the laboratory facilities for carrying them on.

For those who have already pursued course 10 or its equivalent.

Professor HASTINGS :—

12 *Physics.*

Laboratory work, supplemented by lectures on the theory of observation, with the method of least squares. Each year, some

special department of physics is selected for detailed treatment in a course of lectures and conferences. Lectures on the theory of electricity and electrical instruments occupy six months. The use of the laboratory is at the command of the student at all times.

[For courses in Mathematical Physics, see Pure and Applied Mathematics, courses 8 and 11.]

Professor GOOCH and Dr. BROWNING :—

*13 *Experimental Inorganic Chemistry.*

3 exercises both terms.

Practical laboratory work, lectures, and written exercises. An introduction to elementary chemical theory, the use of symbols and formulae, and the descriptive study of the elements and their compounds.

[Monday, Tuesday, Thursday, Friday, 2 to 4 P. M.,
Wednesday, 3 to 5 P. M.]

Dr. BROWNING :—

*14 *Qualitative Chemical Analysis.* 3 exercises both terms.

Laboratory practice in the ordinary processes of qualitative analysis, with lectures. Open to those who have previously covered the ground of course 13.

[Monday, Wednesday, Thursday, 9.30 to 11.20 A. M.]

Professor GOOCH :—

*15 *Elementary Organic Chemistry.* 2 exercises both terms.

An introduction to the study of the compounds of carbon. Laboratory work with lectures. Open only to those who have previously covered the ground of course 13.

[Tuesday, Friday, 9.30 to 11.20 A. M.]

*16 *Quantitative Chemical Analysis (Elementary).*

3 exercises both terms.

Laboratory practice in the simpler methods of volumetric and gravimetric quantitative analysis. Open to those who take course 16, or have taken it previously.

[Tuesday and Thursday, 2 to 5 P. M.]

*17 *Chemical Philosophy.* 2 hrs.

This course, which is open to those who have covered the ground of course 13, is devoted to the study and discussion of the general principles and modern theories of chemistry.

[Monday and Friday, 2 P. M.]

18 *Quantitative Chemical Analysis (second course).*

Practice in the more complex or special processes of gravimetric, volumetric, and electrolytic analysis.

[Daily; hours for consultation fixed by appointment.]

19 *Organic Synthesis.*

Laboratory practice in the preparation of organic substances chosen to illustrate (more fully than is possible in the limited time allotted to course 19) typical methods of synthesis.

[Daily; hours for consultation fixed by appointment.]

20 *Original Work and Research.*

(a) The study of special problems of *analytical chemistry*—either experimental criticism of known processes or constructive work looking toward the development of new methods.

(b) The study of original problems of *inorganic chemistry*—either the critical examination of reactions or the synthesis of compounds.

[Daily; hours for consultation fixed by appointment.]

Professor WELLS :—

The analytical laboratories of the Sheffield Scientific School are open to students in term time from 9 to 1 and from 2 to 5 o'clock, every week-day except Saturday. The greater part of the instruction is given in the laboratory to each student separately, but the various classes have, in addition, one or two familiar lectures or recitations a week, in connection with the studies pursued in the laboratory.

*21 *Qualitative Analysis.* 1st term.

Embraces a study of the commonly-occurring elements in their qualitative relations, and includes a systematic course of analysis for the same. A good knowledge of elementary chemistry is a necessary preparation for this. If desired, the course is extended to include a study of many of the rare elements.

[Laboratory work : Monday to Friday, 9 A. M. to 1 P. M., and 2 to 5 P. M. Lectures and Recitations : Thursday and Friday, 5 P. M.,—occasionally at 12 M.]

*22 *Quantitative Analysis.*

This is open only to those who have taken course 21 or its equivalent.

(a) *Gravimetric Analysis.* Second term. Embraces a series of exercises involving a considerable number of important methods.

(b) *Volumetric Analysis.* First term. This follows the gravimetric analysis. It includes the most important and typical methods.

(c) *Ultimate Organic Analysis.* First term.

23 *Advanced Quantitative Analysis.*

(a) *Metallurgical Chemistry.* The analysis of ores, fuels, fluxes, alloys, metals, and other furnace products.

(b) *Mineralogical Chemistry.* The analysis of minerals for scientific purposes.

*24 *Metallurgy and Assaying.* last half of 2d term.

A course of lectures on elementary metallurgy, followed by a short course of demonstrative lectures on gold and silver assaying, with the practical application of assaying to a few typical ores.

*25 *Technical Gas Analysis.* last half of 2d term.

A short practical course, including the principal methods.

26 *Investigations in Inorganic Chemistry.* both terms.

Opportunities are offered to those who have had sufficient preparation to make researches on analytical methods, in the preparation and investigation of chemical compounds, and other scientific problems.

Professor EATON :—

27 *Systematic Botany (Phænogams).*

Opportunities are offered to graduates who have already some considerable acquaintance with Flowering Plants to pursue advanced studies in the North-American flora, with regard to the identification, description, and distribution of species, and the arrangement of genera and orders. This work is conducted in Professor Eaton's private herbarium, which contains large collections of plants and an ample botanical library.

*28 *Bryology.* 2 hrs. both terms.

This course begins with practical work in the dissection and examination of vegetable tissues, with special reference to the

structure of stems of different types. After some facility has been gained in this kind of work, and in the various processes of microscopic manipulation, the time is devoted to the examination of as many mosses as possible, with a view to becoming acquainted with the genera and with a large number of species. Those who take this course are expected to devote considerable time to field-work and to making collections for their own use. The course is limited to those who have taken a preliminary course in the study of flowering plants.

[Tuesday and Thursday, 2 to 4 P. M.]

Dr. SETCHELL :—

29 *Microscopic Anatomy of Phaenogamous Plants.*

3 hrs. 1st half-year.

Laboratory practice, lectures, and reading.

The cell-structure of the several divisions of Phaenogamous Plants will be studied in suitable types. Special attention is given to Cytology and the details of the processes of reproduction.

30 *Elementary Vegetable Physiology.* 3 hrs. 2d half-year.

Laboratory practice, lectures, and reading.

31 *Morphology and Development of the Cryptogamous Plants.*

3 hrs. both terms.

Laboratory practice, lectures, and reading.

Types of the various groups of Cryptogams are studied in the laboratory, and their structure, development, and relationships discussed in informal lectures.

32 *Mycology and Phycology.* 3 hrs. both terms.

Laboratory practice and reading. Intended for students who desire to study some special groups of the lower cryptogams as regards the identification, distribution, and economic value of the different species.

Professor VERRILL :—

33 *Zoology.*

Laboratory practice, recitations, readings, and lectures. The laboratory work is varied according to circumstances, in order to accommodate, as far as possible, those students who wish

to pursue special branches. A large part of the time is usually devoted to comparative anatomy, morphology, and systematic zoology. Ample collections in the Peabody Museum, representing all classes of animals, are available for instruction, while the proximity to the sea makes it easy to provide fresh or living examples of most classes of marine animals for study and dissection.

[Tuesday, Wednesday, Thursday, and Friday, 10 A. M. to 12 M.]

Professor S. I. SMITH :—

*34 *Elementary Anatomy and Histology.* 4 hrs. 1st term.

Four exercises, of a minimum of two hours each. Laboratory work and informal lectures. The time is devoted principally to dissections of the frog, and work with the microscope on the lower plants and animals, and in vertebrate histology, with special reference to the rudiments of biology and the elements of the morphology of animal tissues. The student is required to make microscopical preparations, keep careful records of his work, and pass frequent examinations.

[Monday and Friday, 2 to 4 P. M. ; Tuesday and Thursday, 3 to 5 P. M.]

*35 *Comparative Anatomy and General Biology.* 6 hrs. 2d term.

An elementary course similar to the last, but more extended. The anatomy and histology of the higher animals are studied in more detail, microscopical preparations of the principal tissues and organs are made and examined, the general principles of the morphology of the tissues are illustrated, and the student is specially drilled in distinguishing the different tissues under the microscope. Near the end of the term, instruction in embryology, with special reference to human morphology, is given by a short course of lectures.

36 *Comparative Anatomy and General Biology.*

Graduate students who have had sufficient elementary training are received in the Sheffield Biological Laboratory and are provided with special advanced courses of instruction adapted as far as possible to the particular wants of the individual student. Such courses may cover either or both terms and require at least three hours of laboratory work per day for two or more days each week. To such students the laboratory is open five days a week.

Professor CHITTENDEN :—

37 *Physiological Chemistry and Physiology.*

Graduate students having sufficient knowledge of analytical and organic chemistry and elementary physiology are received into the Sheffield Biological Laboratory at the beginning of the academic year, where they can pursue a course in physiological chemistry, physiology, and toxicology, extending throughout the entire year. The course necessitates, on an average, four hours of laboratory work per day, and attendance on lectures and recitations three or four times per week. Opportunities are also afforded for the carrying on of original investigations, either in physiological chemistry or in experimental toxicology, and to students qualified for such work the laboratory is open during the entire day.

Students desirous of studying any special subject in physiological chemistry and having but a limited amount of time are also received, provided they are qualified by previous work to pursue the study advantageously. Opportunity is likewise afforded for experimental work in certain lines of pure physiology.

*38 *Physiology.* 1 hr. both terms.

Huxley's *Lessons in Elementary Physiology*, with occasional lectures and illustrative experiments.

[Wednesday, 2 P. M.]

*39 *Physiological Chemistry.* 4 hrs. 2d term.

Four exercises a week, of a minimum of two hours each, in the laboratory of physiological chemistry. The time is devoted mainly to a study of the chemistry of the connective, contractile, and nerve tissues, of the chemical processes of salivary, gastric, and pancreatic digestions, and so far as the time allows, of other subjects connected with the physiology of nutrition and the chemistry of the excretions.

The student must bear the expense of gas, flasks, etc., which should not exceed ten dollars.

Dr. WAKEMAN :—

*40 *Advanced Descriptive and Theoretical Chemistry.*

3 hrs. both terms.

Recitations. Mendeléeff's *Principles of Chemistry* is used as a text-book.

[Monday, Wednesday, and Friday, 8 A. M.]

*41 *Physical Methods used in connection with Chemistry.*

both terms.

Laboratory work. Among the subjects taken up are vapor density, electrical conductivity, molecular-weight determination by the methods of Raoult and Beckmann, and the use of the spectroscope, polariscope, and refractometer. Ostwald's *Lehrbuch der Allgemeinen Chemie* is used as a basis of systematic reading.

Mr. HOWE:—

*42 *Organic Chemistry, Paraffin Series.* 2 hrs. both terms.

Recitations supplemented by lectures and a little laboratory work.

[Monday and Tuesday, 3 P. M.]

*43 *Organic Chemistry, Aromatic Series.* 2 hrs. 1st term.

This follows the preceding course and is similarly conducted.

[Thursday and Friday, 3 P. M.]

VII. PURE AND APPLIED MATHEMATICS

Professor NEWTON :—

- 1 *Analytical Statics : Dynamics of a Particle and of a System of Particles : The problem of three bodies.*
- 2 *Integral Calculus and Mechanics.* 3 hrs. both terms.
Mean values and probability ; differential equations ; analytical statics and dynamics.
[Tuesday, Wednesday, and Friday, 11.30 A. M.]
- 3 *Shooting Stars and Meteors.* 1 hr. both terms.
The mathematical theories of these bodies, and the treatment of the observations of them.

Professor CLARK :—

- 4 *Determinants and Differential Equations (successively).* 2 hrs. both terms.
The short courses in the above subjects are designed especially for the graduate students in the departments of Engineering in the Sheffield Scientific School, whose time is mainly occupied with work in those departments.
[Wednesday and Saturday, 10 A. M.]

Professor GIBBS :—

- 5 *Vector Analysis.* 2 hrs. 1st term.
Elementary course, in which the simpler problems of geometry, kinematics, and mechanics are treated by vector methods. The matter taught is not entirely unlike that usually given in courses in quaternions, but the method followed is in some respects nearer to Grassmann's than to Hamilton's.
- 6 *Vector Analysis.* 2 hrs. 2d term.
Advanced course, including differentiation with respect to position in space, the theory of the potential and allied functions, and that of linear vector functions. This course is especially designed as an introduction to the study of mathematical physics, and is open only to those who have taken the preceding.
- 7 *Multiple Algebra.* 1 hr. both terms.
The object of this course is to give some idea of the methods and results of the principal non-arithmetical algebras, especially

of the *Ausdehnungslehre* and the algebra of matrices. It is intended for such students as have already some familiarity with the algebra of vectors, derived from the preceding courses or from the study of quaternions.

8 *Electricity and Magnetism.* 2 hrs. both terms.

In this course, which is based on Maxwell's *Treatise*, the student will be taught the use of vector methods in this branch of physics. It will be supplemented in the following year by a course, described below, on the *Electro-magnetic theory of Light*.

In the year 1896-97, in addition to the courses 5 and 6 in vector analysis, the following will be given :

9 *Electro-Magnetic Theory of Light.* 2 hrs. both terms.

This course will commence with the general theory of harmonic motion and its representation by complex scalar and vector quantities. The laws of electrodynamics are then applied to the phenomena of the propagation of light in isotropic and aeolotropic media, and its reflection at a surface between two such media, with the dispersion of colors.

The following courses will probably be given either in 1895-6 or in 1896-7 :

10 *Miscellaneous Applications of Vector Analysis.*

1 hr. both terms.

These applications are to such subjects as :—the theory of curvature, surfaces of the second degree, the motion of a rigid body, the fundamental principles of hydrodynamics, and elliptic and parabolic motion.

11 *Thermodynamics and Properties of Matter.*

This course is a development of the consequences of the two fundamental laws of thermodynamics, as affording a general theory of physical and chemical equilibrium, and as giving shape to the investigation of the sensible properties of matter. It will be followed in another year by a course which is essentially an application of the theory of probabilities to molecular mechanics, in which the notions of temperature and entropy, and the second law of thermodynamics are deduced from *a priori* considerations.

Professor C. B. RICHARDS :—

MECHANICAL ENGINEERING.

This course, arranged for candidates for the degree of Mechanical (or Dynamical) Engineer, is open also to special graduate students, who are allowed in certain cases to take selected parts. The leading topics are :

12 *Applied Mechanics.*

Including graphical methods in applied kinematics, and in the investigation of mechanisms working with friction ; graphical determinations of the accelerations of the moving parts of machines ; the strength of materials as affecting the proportions of machine elements ; the applications of the principles of hydraulics to the construction and working of turbines and pumps.

13 *Thermodynamics.*

Applications to the compound steam-engine, air compressors and compressed air motors, engines worked by volatile vapors, refrigerating machines, the warming and ventilation of buildings.

14 *Machine Design.*

In this course the student is engaged in practical exercises under the guidance of the professor in charge, investigating machinery, the designing and making of working-drawings, specifications, and estimates for machines and manufacturing plant. In addition to the study of machines in general, either of the following subjects (at the option of the student) receives particular attention : (a) Marine engineering ; (b) Railway machinery ; (c) Pumping machinery and plant ; (d) Machinery and plant for manufacturing. The student is required to make complete drawings, from new designs, of at least one important piece of machinery under one of these subjects. A compound marine engine and boilers, a locomotive, a turbine, driving centrifugal pumps, a blowing-engine for an iron furnace, are examples.

Candidates for the degree of Mechanical Engineer are required to take also a course in mathematics, to sustain a final examination, and to present a satisfactory thesis on a subject approved by the professor in charge of the course.

Lectures on Industrial Legislation and Finance, and lectures on the higher Mathematics, are open to all students in this course.

Professor E. L. RICHARDS :—

*15 *Navigation and Nautical Astronomy.* 2 hrs. both terms.

The course will treat mostly of the theory of navigation and nautical astronomy, but will also include instruction in the use of charts, and practice in observations with the sextant.

[Monday and Thursday, 9.30 A. M.]

Professor DuBOIS :—

CIVIL ENGINEERING.

This course offers instruction for advanced graduate students as well as for those students who may be regular candidates for the degree of Civil Engineer.

It embraces the following topics :

16 *Mechanics applied to Engineering.*

Including the application of kinematics, statics, and kinetics to engineering problems.

17 *Construction and Design.*

Including the strength and properties of materials, construction and design of bridges, roofs, foundations, retaining walls, dams and embankments, masonry, arches, sewerage and drainage, improvement of rivers and harbors, specifications and contracts, and the preparation of designs and working-drawings.

Candidates for the degree of Civil Engineer are required to take, in addition, a selected course in mathematics, practical astronomy, and when the facilities in the physical laboratory permit, a course of laboratory work, under the superintendence of the professors in charge. They are also required to sustain a final examination, and to present a satisfactory thesis accompanied by appropriate designs, upon a subject approved by the professor in charge of the course.

To special students, not candidates for the degree of Civil Engineer, a selection of special topics is allowed. The lectures of the Department upon Railroad Administration, Industrial Legislation, and Finance, and upon the higher Mathematics, are open to all the students in this course.

Assistant Professor BEEBE :—

*18 *Descriptive Astronomy.* 3 hrs. to Feb. 1st.

Intended principally for the study of topics connected with the historical and physical side of Astronomy.

Text-book : Young's *Elements of Astronomy.*

[Monday, Wednesday, and Thursday, 10.30 A. M.]

*19 *Surveying.* 3 hrs. from Feb. 1st.

One, and sometimes two, hours per week will be given to recitations. The other exercises will be in field or office work during the afternoons, each exercise usually occupying not less than two hours.

Field-Work: the ordinary operations of land surveying, leveling and elementary topography, involving the use of the chain, compass, surveyor's level, transit, and plane table.

Office-Work: platting surveys from field notes; determinations of areas from the map and by numerical calculation; map-drawing, plane and topographical; examination of instrumental errors.

Text-book: Johnson's *Surveying*.

*20 *Practical Astronomy.* 2 hrs. both terms.

Observatory work with astronomical transit and chronograph for determination of sidereal and standard time; and with sextant and theodolite for determination of latitude and azimuth. Numerical computations for reduction of observations.

Text-book: Loomis's *Practical Astronomy*.

[Tuesday and Friday, 10.30 A. M.]

Professor PHILLIPS:—

*21 *Analytical Geometry.* 2 hrs. both terms.

A course in Analytical Geometry open to those who have studied the elements of the subject. It includes the use of determinants and trilinear coördinates; methods of tracing algebraic and transcendental curves; applications to map projection; study of machines for tracing curves, and of models of mathematical surfaces; discussion of the general equations of the second and third degrees, and of the sections of the cones of the second and third degrees.

[Wednesday and Saturday, 9.30 A. M.]

Assistant Professor BARNEY:

*22 *Railway Surveying.* Three weeks in September.

A preliminary line for a railroad is run out, and from the contour map so obtained a final line is located, staked out, and cross-sectioned, and estimates are made for construction. The field-work begins the first Monday in September and occupies the entire time for three weeks.

23 *Geodesy and Practical Astronomy.*

Methods of observation, based on measurements, triangulation field-work ; theory of least squares, adjustment of observations, and computation of geodetic latitudes, longitudes, and azimuth. The study of practical astronomy embraces the use of the sextant and engineer's transit with solar attachment for determining time, latitude, azimuth, and needle variation.

Dr. PIERPONT :—

24 *Introduction to General Analysis.* 3 hrs. both terms.

This course is in preparation for courses in the theory of functions and other advanced work in analysis, and is open only to those who have studied the differential and integral calculus.

[Monday, Wednesday, and Thursday, 10.30 A. M.]

25 *Elliptic Functions.* 2 hrs. both terms.

General theory of the Jacobian and Weierstrassian functions. The theory of transformation and the equations of transformation will be treated in detail.

Mr. BOWDEN :—

*26 *Algebra.* 2 hrs. both terms.

The text-books used will be Burnside and Panton's *Theory of Equations* and the second part of Chrystal's *Algebra*.

[Tuesday and Friday, 2 P. M.]

Mr. BUMSTEAD :—

27 *Dynamics of a Rigid Body.* 1 hr. both terms.

Development of the general principles of equilibrium and their application to the motion of a rigid body.

The Mathematical Club holds fortnightly meetings, at which are presented sketches of the history of mathematical development and inventions, summaries of articles in the current periodicals and other publications in pure and applied mathematics, descriptions and models of new apparatus, together with the original investigations of the instructors and advanced students in this department of study.

VIII. THE FINE ARTS

Professor WEIR :—

- 1 *Technical Course in Painting.* 2 hrs. both terms.

This course consists of two exercises a week of two hours each. The course consists principally of studies in water-color painting, and includes lectures on the grammar of art, on painting, sculpture, and architecture, technically considered, with a critical account of the various schools and their representative masters. The lectures are fully illustrated by the use of the hydro-oxygen lantern.

[Monday and Friday, 2 to 4 P. M.]

- 2 *Course in Modeling.* 2 hrs. both terms.

Two exercises a week of two hours each. The course consists in modeling from the antique and from the living figure, and is supplemented by the lectures given in course 1.

Professor HOPPIN :—

- 3 *History of Art.* 1 hr. 2d term.

This course will comprise the history of the dawn of Christian art, and of modern art in Italy to the 17th century, with an account of Byzantine art, and the rise of Saracenic architecture.

Lectures on any particular topic of Greek art, of special importance to classical students, such as Doric architecture, or the excavations at Olympia, may be given.

The course will consist of one lecture a week, on Tuesday at 3 P. M.

The lectures are illustrated by the use of the hydro-oxygen lantern.

Professor NIEMEYER :—

- 4 *Course in Drawing.* 2 hrs. both terms.

This course consists of two exercises a week of two hours each in drawing from the antique and from life, and also in sketching from nature out of doors. Exercises in original composition are required from time to time. It is the aim of this course to teach the fundamental principles of art, and to make the student familiar with the use of pen and pencil.

The work in drawing is supplemented by lectures in Linear Perspective and the analysis of the muscular movements of the human body as expressed in the external forms.

[Tuesday and Thursday, 2 to 4 P. M.]

IX. MUSIC.

Professor PARKER :—

- *₁ *Harmony.* 2 hrs. both terms.
The study of chords, their construction, relations, and progressions.
[Tuesday and Thursday, 4 P. M.]

- *₂ *Counterpoint.* 2 hrs. both terms.
The work will be harmonizing and supplying melodious additional voices to choral and other melodies used as *Canti Firmi*.
Students in this course are encouraged to try the simpler forms of free composition.
[Tuesday and Thursday, 3 P. M.]

- *₃ *Strict Composition.* 2 hrs. both terms.
The more severe kinds of composition will form the basis of work in this course. This course is preparatory to course 6.
[Tuesday and Thursday, 2 P. M.]

4. *The History of Music.* 1 hr. both terms.
Lectures on the development of music from its earliest stages. Practical illustrations of the lectures on musical form will be given in the class-room.

- *₅. *Instrumentation.* 2 hrs. both terms.
[Wednesday and Friday, 3 P. M.]

6. *Free Composition.* 2 hrs. both terms.
Several of the smaller forms of free instrumental and vocal music are composed by the students, such as part-songs for male, female, or mixed voices, and pieces of different sorts for the piano and other instruments.
At the close of the year the student will be required to produce an extended work, probably in sonata form.
[Wednesday and Friday, 2 P. M.]

Professor SANFORD :—

7. *Practical Music.*
Instruction will be given on the organ and piano to a limited number of the students who take Courses in the Theory of Music. A fee of twenty-five dollars will be charged.

X. PHYSICAL CULTURE

Drs. SEAVER and ANDERSON :—

*₁ *Physiology and Theory of Gymnastics.* 2 hrs. both terms.

This course is designed for those who intend to teach physical culture or to direct departments of physical education in institutions of learning. The work will come under two general branches as follows :

Physiology (Dr. SEAVER).

1 hr. both terms.

This work consists of one recitation a week during the year. The first term is devoted to elementary physiology. The second term is devoted to human physiology, special attention being given to a study of the circulation, respiration, digestion, and excretion. The hygienic importance of these topics is carefully studied. The last half term is given to a study of sanitary science.

[Thursday, 7 P. M.]

Theory of Gymnastics (Dr. ANDERSON). 1 hr. both terms.

Under this head will be discussed (a) the scientific basis of physical training ; (b) history of gymnastics and growth of the various systems ; (c) means employed, such as apparatus and appliances ; (d) physical examinations and measurements ; (e) pedagogy of gymnastics ; (f) practice in teaching gymnastics three hours a week. (One lecture a week during the second term.)

Three hours a week will be required in special gymnastic drill.

Members of the class will be expected to act as division leaders under the direction of Mr. H. S. Anderson. They will also be called upon to arrange exercises for other classes, and to classify movements for overcoming common physical defects.

[Practice, Tuesday and Thursday, 2 P. M.]